167 [464] /312 cont./Some years ago, old Taruirí, having learned from some Chiriguano that Brazilians were "caritosos," that is, generous, had the idea of going to their country to find work, for which he hoped to be well paid. He banded together with 45 other Chiriguano before whom he held out the glittering fortune which awaited them in the country to the east. With this adventurous spirit and boldness which characterize the Guarani, they did not hesitate to take off toward the unknown. They first passed through Chané territory and followed the course of the Parapiti to the desert. There they rushed boldly into these unexplored regions, dried-up expanses, which separate the Izozoc from Chiquitos. They were all armed with bows and arrows to defend themselves from a possible attack by the Tsirakua, the tracks of whose squared-off sandals they often saw in the sand. No water, of course, but only aipóy roots, which permitted them to stand the thirst. After 12 days of walking, this band arrived at Chiquitos, then from there reached the Paraguay River and Corumbá. Taruirí was not a little surprised to find brothers there, "that is," he explained to me, "people who spoke my language, badly it is true, but who nevertheless made themselves understood." When I inquired discreetly as to the success of his business over there, Taruirí answered, shaking his head and in a tone shot through with sadness and disillusionment: "All that was only a lie," todo era engaño.

[291] [824]

Taruirí does not know and will never know that by doing this he accomplished an exploit that would be the pride and glory of an explorer. For him, it was a question of a simple trip, scarcely longer and more arduous than the one he undertook in the past to go to Argentina.

193 539 648 484 Does anyone want other modern examples of their spirit of adventure and of that ease with which the Guarani move about? I transcribe as such the curious tale told to me by the Indian Cipriano from the Ivu mission, who, confused as he may be, refers to definitely authentic facts:

/334 cont./

241 Before taking possession of a new plot of land the
423 Chiriguano is always careful to make sure that there is no trace
243 of previous cultivation. Otherwise the former owner or his
[685] descendants would have the right to lodge a complaint against him to the chief of the village.

• [824] The Chiriguano makes known his new property right by planting any edible plant before the rainy season, for example, the large squash (gindako-waiu) which spreads everywhere and is not smothered by the underbrush. He can equally well insure possession of the chosen terrain by knocking down the underbrush all around and making big gashes in the trees (1).

[171] 1. Compare this manner of insuring property rights with the method observed by the Caxinawa /Cashinawa/ in the same circumstances: "I saw (an Indian is speaking) rising ground which is suitable for a planting. I am going to make a planting for this summer. I broke many branches on this hill to mark this excellent place. No one can make his clearing on this hill. This hill is excellent; do not go there to make your planting." (Abreu, p. 69.)

241 In the middle of the dry season, say, in August, the
243 Indian, with a long stick sharp on both sides, fells the underbrush which encumbers his future field and sets fire to it. This operation has the further advantage of fertilizing the soil, thanks to the bed of ashes, which is a rather good fertilizer.

The cultivated fields are usually cleaned up after the harvest.
[231] The domestic animals, who feed there with little expense, are first let out there, and then the fields are set afire.

[221] Sowing takes place in the month of November when the first rainstorms have softened the soil. This time is announced by
[821] the appearance of the Pleiades (itiu) above the horizon early in the morning.

/334 cont./

241 The Chiriguano who is getting ready to sow takes care
243 to hoe his field and to rid it of all weeds. For this he uses /335/ a shovel, which I shall describe, in part from Campana
243 (p. 98), not having seen this instrument whole.

241 The shovels (sipe of the Chiriguano, even not so long
412 ago, were entirely of wood, preferably wood of the urundei
[824] (Astronium urundeuva F. Allemao) or of the palm siripa. Although narrower and longer, they resembled those of our bakers. The edges were straight, almost parallel, and only the cutting edge was slightly rounded at the sides. Toward the top they ended in a point, a
[824] kind of embryonic handle, which was lengthened by a stick to which it was attached with ties made of churqui (Nilotica farnesiana), of lianas, or toboroši fibers. The two shovels examined by Campana measured 70 centimeters in length and 15 in width; one of them, however, was less wide at the top than at the bottom by several centimeters (Fig. 2).

Fig. 2. Shovel (sipe) made of wood, without its handle, formerly in use among the Chiriguano (from Campana, Pl. VIII, Fig. 1).

If the Chiriguano have abandoned the ancient wooden shovel, they have nevertheless faithfully kept the long handle to which it was attached and which permitted them to work the soil without having to bend over. A remark of psychological order becomes necessary in this regard. The Chiriguano
[439] could well have acquired in the Syrians' stores, where they are available, shovels already provided with handles and ready to use. If they felt the need to modify the handle and to give it the traditional form, it is because it did not correspond to the movements and position of the body and hands which an age-old tradition had ingrained.

In each human group all manual labor requires certain set gestures to which, to a certain extent, the tools are adapted. This explains the variations these exhibit from country to country and even from tribe to tribe. With regard to this, Professor

/338 cont./

241 Sorghum (triku) (Sorghum sacchariferum) (1);

[262] 1. Sorghum is cultivated only on a very small scale. It is a delicacy that the Chiriguano reserve for children, who suck its stalk.

/339/ Sugar cane;
Melons;
Watermelons (sandias);
Prickly pear (saini) (Opuntia spec.);
Fig trees;
Orange trees (in the missions).

[199] The Chiriguano cultivate only on a very small scale the plants which, like sorghum, sugar cane, fig trees, and orange trees, have been introduced by the Europeans. Of these only melons enjoy general favor.

248 They always devote some parts of their fields to the cultivation of plants of value only for their arts and manufactures. These are: cotton plants (mandiyú), cucurbitaceous plants (iá) which grow on the ground next to their squash and furnish the containers they need, roucou (urukú), which scarcely exists except in the northern part of their habitat, and finally a species of reed (Arundo donax) with which they make the shafts of their arrows.

249 They also plant tobacco (pẽtĩ), but I have never seen any in their fields. According to Nordenskiöld (10, p. 25), its [276] [123] cultivation is insignificant and rare. The Chiriguano are not great smokers, and the numerous packs of cigarettes I took along for them found only a few devotees. Among the Toba, Matako /Mataco/, or Chorotí /Choroti/ my stocks would have been exhausted in the wink of an eye, for these Indians love tobacco more than anything in the world.

276 The use of tobacco among the ancient Chiriguano, as among 756 their ancestors in Paraguay or Brazil, was reserved for the 824 medicine men for their magical operations. Their use made [178] of it a plant endowed with "mystical" virtues, and its

/339 cont./
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consumption was limited (1).

1. Father Giannechini (Diccionario Chiriguano-Espagnol, etc., pp. 169-170) gives us very interesting details on this topic. Formerly, says he, tobacco was reserved for magicians and adults. He states that even today where its use is most widespread it is cultivated on only a very small scale. The Chiriguano do not have the patience to let it ripen and dry it over the fire in order to be able to smoke it.

[249]

[755]

When they were called to a sick person, the medicine men used to put themselves in a trance by smoking ever so much. By this means they discovered the author of the illness and gave him battle.

[789]

We shall see farther along (p. 76) the role of tobacco in the magical ceremonies intended to make rain fall.

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At harvest time I visited the lands cultivated by the Indians of the Caruruti region in Caipipendi valley. From the end of February to the month of April, the Indians rarely spend the day at home. Most of the time they go to settle down in their fields, leaving the village as soon as the corn begins to ripen, not to return until the /340/ end of the harvest. The

[351]
house of the absentees is made safe from all foreign intrusion by thorn hedges which they raise all around or only in front of the door. The latter can also be closed by a cot or bedstead, which they put up against it and anchor solidly (Fig. 6). ↑

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This temporary migration of the whole population of a village to the fields sometimes made my job as a collector rather difficult. It /Fig. 7 appears here/ often happened that I found

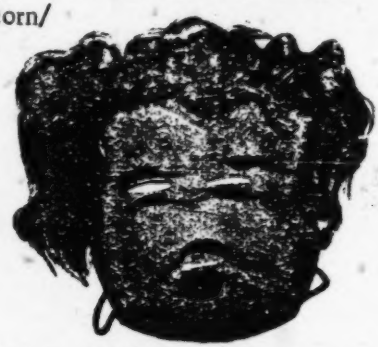
[421]
myself in nearly empty villages. The rare Indians who had remained there refused obstinately, and rightly, to sell me the objects which interested me, if they belonged to an absent person.

↑ [Fig 6 appears on p. 69 -- Analyst]

/341 cont./

241 115 ladder, that is, a thick branch with deep cuts for steps. Captain Karnapadyú's chacra /cultivated clearing/ was about 200 meters by 70 meters in size. At the edge stood a small wooden hut covered with straw.

The "Captain" began by showing me some manioc plants and had me cross a large square sown exclusively with beans and gourds /citronilles/. The corn fields came next. They were divided in two by a second hedge formed of trunks and thorns. Squash /courges/ grew between the rows of corn. After the maïzal /field of corn/ followed a second expanse covered with beans, squash, and melons, which Karnapadyú told me belonged to his daughter. Here and there rose several stalks of sorghum. A new corn-field was opposite the



241 532 322 237 Fig. 8. Mask (tovaraanga) carved out of a calabash and provided with hair and eyebrows of horsehair. It was hung up in a planted field where it was serving as a scarecrow. Prov.: Carurutí. (1/5 nat. size.)

241 115 [322] [415] [824] first, and another cabin rose at its edge. In both of these properties the only plants cultivated for their manufacturing value were the cucurbitaceous ones from which the Indians make their cups and bottles.

Next, on the opposite cliff, I visited the chacra of another Indian of the same village. A steeper and more difficult road than the first led to it. The plantation was lower down a hill on which a little hut was perched. These fields were almost solely covered with corn among whose stalks grew squash. As before, the maïzales were preceded by plantings of beans and squash.

/344 cont./

526 immediately, chased by his comrades who pulled his hair
178 energetically. The awkward player who threw the ball in such
243 a way that his partner could not catch it was in the same
789 category as the one who let it fall, on condition, however, that his opposite number had not made the gesture of catching it. Once the corn was ripe, they stopped playing mbotó.

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The game of mbotó has a wide distribution in South America, but it is limited to the populations of the Amazonian basin and the Guianas. Doubtless the Chiriguano introduced it into the Chaco (Nordenskiöld, 9, p. 168).

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Fig. 10. Forked tree on which the Chiriguano pile corn inside their huts. This device may have given rise to the corncribs on piles.

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This game without any doubt derives from a magical rite whose object was to promote the beneficial course of the sun and to oblige it to shine without interruption to make the corn ripen. The straw shuttlecock represents the sun. The period when this game is played and the meaning the Chiriguano attach to it make my hypothesis a very likely one. Preuss demonstrated that in all of Central America and even in North America the /345/ tennis game arose out of a magical operation intended to influence the sun.

Fig. 11. Straw shuttlecock (mbotó), accessory for the game of the same name. Prov.: Carurutí. (1/3 nat. size.)

/353 cont./

372 [171] In former times the Chiriguano made fire exactly like all the Indians of South America, by rubbing two sticks one against /354/ each other. One of my friends from Carurutí reconstructed one of these devices for me in the hope of surprising me and getting a good price for it. He took two sticks of tata iwira, or fire wood (1), cut one of them lengthwise

• [824]

1. According to Father D. Giannechini (Diccionario Chiriguano-Español, etc., p. 91), the Chiriguano might use, for obtaining fire by rotation, sticks made from the wood of a red liana whose flower has five yellow petals with a red spot on one of them. The Chiriguano name for this plant is isipo-pinta.

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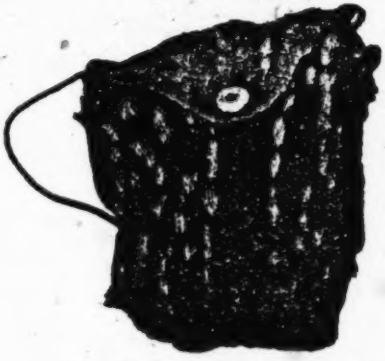

Fig. 23. Small deerskin bag in which a Chiriguano used to carry a tinderbox and its accessories. Prov.: Pípi. (1/3 nat. size.)

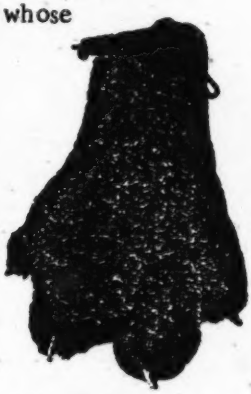

Fig. 24. Puma paw (yagua-pintaipo) made into a bag. Prov.: Saladito. (1/4 nat. size.)

415 281 →

372 [824]

and provided one of its sides with two cups along which he contrived a perpendicular groove. These two little furrows were intended to conduct the glowing sawdust onto the tinder placed on the ground. /Fig. 25 appears here./ The other stick was slightly sharpened to allow it to go into the cups. Since this

/363 cont./

234 262 To end up, one could still cite among Chiriguano food the cheese they make in some villages. Each time they butcher they take care to keep the abomasus in order to make [177] milk separate. Chiriguano cheeses are of the same quality as those of the half-breeds, who for once have taught something [272] to our Indians. I shall add that I have never seen a Chiriguano drink milk.

312 133 The problem of water does not come up for the Chiriguano as for the other Indians of the Chaco. Numerous rivers cross their territory, and several of them are large enough not to dry up even in the middle of the dry season. These watercourses form innumerable quebradas, gorges or valleys, which give its characteristic aspect to the country inhabited by our Indians. [361] Sometimes villages are built near springs or small lakes, like the Ivu mission, which is provided with plenty of water.

312 When I crossed the Caipipendí valley, the river which occupies the bottom was nearly dry. The Indians had scooped out small wells about one meter in depth in the sand of its bed. They had surrounded them with slabs of stone to prevent any caving in and to preserve the water which accumulated in them from the heat of the sun. In this same valley, in a village situated on top of a hill, the Indians had dug a cistern four to five meters in diameter in which rain water had collected.

271 312 824 The Chiriguano have found a way to purify the muddy water they often have to drink. They crush caraguatá leaves between two stones, then steep them in the water, and all its impurities settle as a result of the action of the juice of this plant.

264 The Chiriguano do not eat at set times. They make a rather substantial breakfast very early in the morning and again take some food toward the middle of the day. In the evening [562] about six o'clock they make a kind of dinner. Since the men are served first, then the women and children, it follows that the meals drag out in length. At any moment of the day one [415] can see someone eating. The food /364/ is presented to each one in a calabash or terra-cotta bowl which each holds on his knees. They pick up the pieces with their fingers but imbibe liquids with a wooden spoon (Figs. 42 and 43). After eating, they wash their hands. I have seen some rinse out their mouths.

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Fig. 29. Iron peg with leather handle used for husking ears of corn. Chiriguano. Prov.: Saladito. (1/2 nat. size.)

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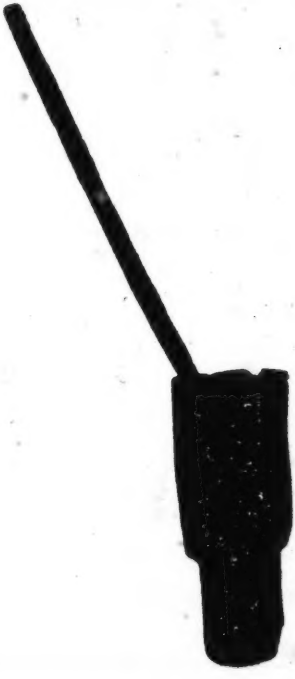

Fig. 30. Chiriguano mortar (angué) made of urundey wood (Astronium urundeuva Fr. Allemao), with its pestle. The lower, recessed part is buried in the ground. Prov.: Ivu. (1/15 nat. size.)

C /368 cont./
273 A certain variety of kāwi is prepared by boiling it again after passing it through the sieve and "bottling" it only after letting it cool a second time.

Kāwi is generally covered with a thick oily layer which the Indians are far from scorning. The mistress of the house takes the precaution of pouring a certain quantity of it into the vessels which do not have any.

In their descriptions of the preparation of kāwi, Giannecchini and Nordenskiöld say nothing about the temisu, the umopirai, and, in general, a good many of the stages the corn goes through before being converted into beer. This silence is probably due to the very complexity of this operation, more than one detail of which certainly escaped them. The preparation of kāwi is a tiring occupation which requires great effort. The Indians display a veritable science in its manufacture. It is easier to distill alcohol, and, in any case, this is a task demanding less physical activity. Perhaps centuries of groping were needed for arriving at determining the time of cooking, the proportions of roasted and chewed flour, the quality of the grain, etc. All that is the result of minute observations, many trials, and also much reflection. These considerations are intended to justify the remark made at the beginning of this chapter: a simple cooking recipe often tells as much about the civilization of a people as a perfected tool.

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/369/. The fruits of the mistol, chañar, or algarroba can give a chicha that the Chaco Indians like very much, but which the Chiriguano scorn. They have recourse to it only in case of scarcity. The Chané of the Izozoc, whom I could not visit, have the specialty of kāwi from batatas. The Chiriguano also know how to make use of this tuber to prepare a fermented drink, but they judge it to be of inferior quality and declare that one must be a poor devil to take any. (Nordenskiöld, 2, p. 236) (1).

1. Barco Centenera (p. 315) already mentions the different types of chicha prepared by the Chiriguano: "El vino de maiz y de algarroba,

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De Molles, y de murta bien obrado,
Seguro que bebian casi arroba,
Que media á cada cual le estaba dado."
/The wine of maize and of algarroba,
Of Molles, and of myrtle well worked,
It is certain that they drank almost
an arroba,
The measure which was given to each
one./

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Kāwi is too respected a drink to be drunk in any old way. Etiquette requires one to comply with certain rules if the honor of participating in a drinking bout is done you. I sometimes had a chance to be invited to these festivities, and on such an occasion I was able to make the following observations which I am setting down just as I noted them in my field notebook: The men are seated in a circle on chairs or benches. The women squat behind them, on skins spread out on the ground.

[554]

The kāwi is brought in vessels shaped like bulls, and one of them is put down at the feet of the "captain." The girl who has brought it fills a small calabash and offers it to the "captain," who empties it. Next he serves me and gives the vessel back to her. He does the same with my neighbor, then with several of the guests. Then he hands the calabash to his wife and goes to sit down. The latter serves the rest of the men present.

A second vessel, brimming over with kāwi, is put this time before another Indian who perhaps is held in some esteem. He drinks first, then busies himself with his companions. Two large calabashes are then given over to the women, and from that moment on, the distribution no longer seems to follow any order. Men and women drink and serve their neighbors without obeying any rule of decorum other than not to forget other people. They acquit themselves perfectly in this duty of politeness, and nobody is neglected, not even the very small children, who take alarming quantities of kāwi.

/374 cont./
415 surmounted by two nipples, remains of stylized ears. These protuberances can be perforated and allow a suspension cord to pass through, which permits hooking the bowl to a beam of the hut (Fig. 41).

Spoons

412 Spoons are very common among the Chiriguano. Their
191 form connects them closely to those which have been made
192 known to us by the excavations carried out on the Bolivian altiplano and in northwestern Argentina. It is among the ancient populations of this region that we must seek the origin of this cultural element (on this subject see Nordenskiöld, 9, pp. 91-92), of which the Chiriguano have faithfully kept the primitive aspect and even certain peculiarities such as the indentations of the handle which /Plates XIX-XXI appear here/ /375/ are seen on one of our specimens and on one discovered in the Puna de Jujuy (Pucara de Rinconada) by Boman (2, Vol. II, Plate LIX, Fig. 142).

412 Beside these spoons, whose use spread under the influence
237 of the civilized peoples of the west, the Chiriguano kept the
824 most rudimentary forms of this utensil: the valves of a fresh-water mollusk (anodonta) (in Chiriguano: inta) are often used by them to eat liquid dishes; the shell of the fruit of a bignoniacea (?) opened lengthwise also appears in the north of the Chiriguano territory as the survival of a time when spoons were still unknown to them (Fig. 44).

412 Some small calabashes, ovoid or round, with a jutting
[191] peduncle, can, after being cut through the middle, replace wooden spoons to advantage (Fig. 45). It was in this natural form that the spoon spread in tropical America where Andean influence did not make itself felt. The Chiriguano do not disdain using these half-calabashes to dip into the bean pot or the meat broth. Calabashes like the one of Figure 46 /see p. 139/ take the place of ladles.

1: Métraux--136 E-5 (1929) 1930 SF10 Chiriguano SF10

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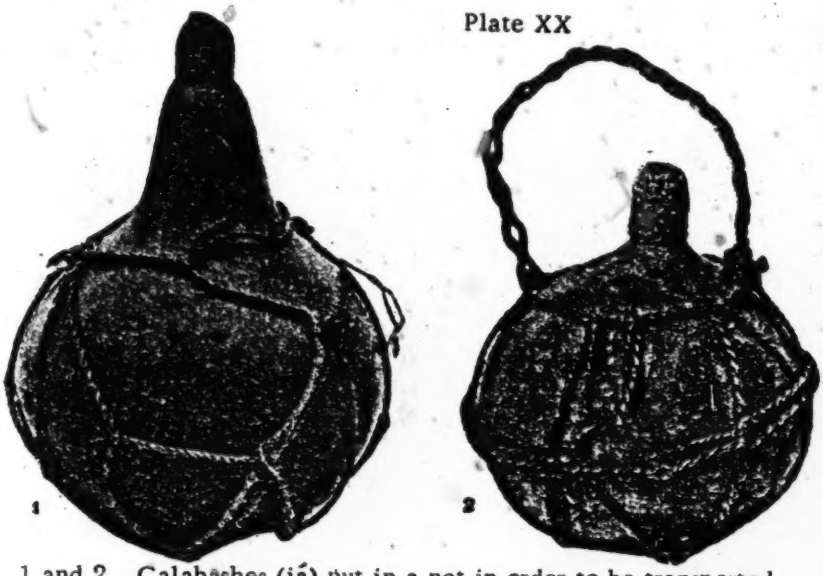
Plate XX



1 and 2. Calabashes (iá) put in a net in order to be transported or hung in the hut. Prov.: Saladito and Ivu. (1/3 nat. size.)

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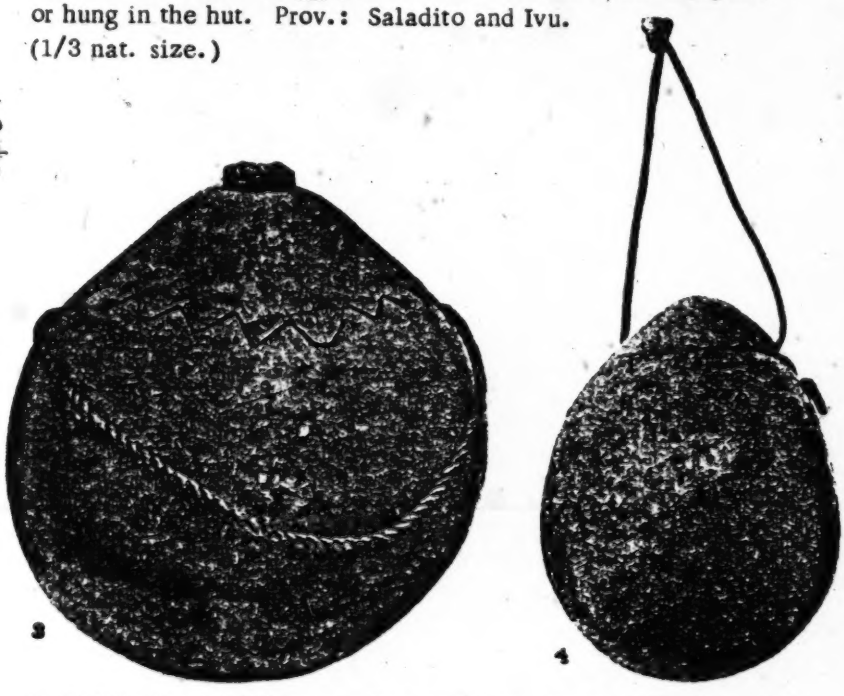

3. Calabash with lid cut out in star shape. Prov.: Saladito. (1/3 nat. size.) 4. Calabash with automatic closing. Prov.: Ivu. (About 2/5 nat. size.)

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Figs. 42-43. Wooden spoons (karuha or iwira-karu). No. 42 comes from Caruruti and 43 from Nawirenda. (1/4 nat. size.)

Fig. 44. A bignoniaceous or an asclepiadaceous fruit whose shell cut in half is utilized by the Chiriguano as a cup or spoon. Prov.: Caipipendí. (2/5 nat. size.)

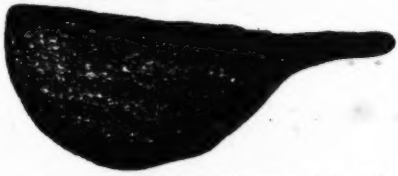

Fig. 45. Calabash cut in half to serve as a spoon. Prov.: Macharetí. (1/4 nat. size.)

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Fig. 46. Ladle carved out of a calabash. Prov.: Tintapaw (upper Pilcomayo). (1/7 nat. size.)

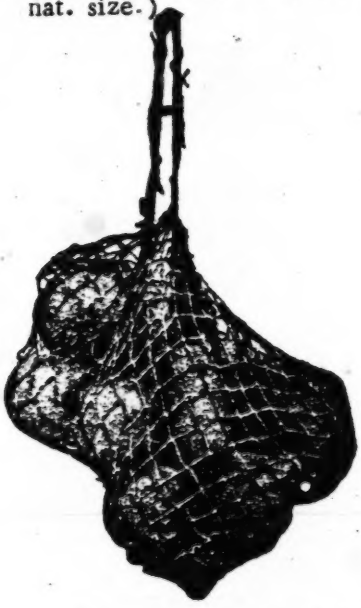

Fig. 47. Reserve calabashes hanging in a net inside a Chiriguano hut. Ibopeytí.

276 /380 cont./
179 spread among the Chiriguano recently for it has not yet spread
171 throughout the territory they inhabit. The Chiriguano who live far removed from the half-breed or Indian populations of the Cordillera are not "coqueros," and only rarely does one meet among them some old man who accepts a quid of coca.

276 Ivu is the last point toward the east and north where I
171 could distribute my supply of coca to advantage. Nordenskiöld
302 (10, pp. 85-91) sought to demonstrate that the custom of
114 blackening the teeth went along cheek by jowl with that of chewing coca and derived from it. As a matter of fact, this habit has a very marked western distribution and follows the zone of coca cultivation.

276 The Chiriguano mix each quid of coca with the ashes
[824] reaped from a tree (ulala) whose scientific name I do not know. These ashes (tanimbo), which corresponds to the llicta of the Quichua, are contained in a small leather bag.

276 Coca is a luxury commodity which the Quichua Indians
439 or half-breeds come to sell to the Chiriguano. To avoid all
804 argument and all fraud on the part of unscrupulous sellers, the Chiriguano have recourse to balances of their own making. They fabricate them with /381/ two calabashes cut in half to serve as scales (Figs. 54 and 55). The balance with scales was in
[179] use in pre-Hispanic times /Fig. 54 appears here/ in the ancient Inca Empire (see Nordenskiöld, 16) and so I believed at first that among the Chiriguano it represented a survival of /Fig. 55 appears here/ the Andean influence, whose importance we shall see further on. Among the Chiriguano, however, this object is designated by the Spanish name /382/ mbalanza, which seems to indicate that they borrowed it from the half-breeds. The latter and the Quichua use them in their commercial transactions, but especially for weighing the precious coca. Perhaps it was the same in prehistoric times. There is nothing to prove that only metals were weighed, as has been supposed with respect to these ancient scales.

804 For weights the Chiriguano use old Bolivian silver coins
177 and express measures according to the old Spanish system. By a tacit convention a coin worth two modern sous is the equivalent of one ounce.

/383 cont./

323 Chiriguano woman will never be seen making one single vessel at a time: since before continuing she must wait until each one of the parts making up the piece of pottery is dry, she occupies this interval by beginning another vessel, which will dry while she works on the first one again.

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Figs. 57-58. Vessels (yapepó). The rolls of clay of which they are composed are still apparent and constitute a rudimentary ornamentation. No. 57 comes from Caruruti, No. 58 from Yacuiba. (1/4 nat. size.)

323 /384/ When she judges that the bottom has taken on some firmness, she rolls between her hands a roll to which she tries to give a regular diameter. Then she applies it on the base, forming a perfect circle. She cuts off the part which extends beyond the junction point. Next she flattens the roll with her hand, the compression being made from inside to outside, with the back of the left hand and the right palm. When the whole periphery has thus been raised, she evens off the edge, filling all the depressions with pieces of wet earth. Then she smooths the outside of the vessel with a stripped ear of corn and a splinter of bamboo. These two instruments are placed beside her and frequently dipped in water so that the earth does not stick to them. The inside surfaces are polished with the valve of a shell (anodonta) (Plate XXIV, 2). The raw clay, once it is shaped, is supple and resistant like leather. Vessels can be

[824] [412] [239]

/431 cont./

Chapter VIII

Weaving

286 [177] Weaving is a very widespread industry among the Chiriguano. Unfortunately, at the present time its products are commonplace and, since they have been using aniline dyes (1), often very ugly.

386 824

1. The Chiriguano used to extract blue dye from a plant they call kaa-howi, that is to say, "blue grass." They also used to grow it. In order to color their tiru (large sleeveless bag slipped on over the tipoy, of the same shape but less ample), they dipped them into a decoction of this grass. Sometimes also they used to add coloring woods, such as palo soto or quebracho, to this bouillon. The leaves of a tree which easily reaches a height of eight to ten meters, the iwira kaa-howi, also furnish a blue dye, but for that they must be young and the tree must be in bloom.

With piari, black resin which exudes from the trunk of the algarroba (Prosopis), Chiriguano women blacken the tiru which they had dyed blue. (Diccionario Chiriguano-Español y Español-Chiriguano, etc., pp. 16-17 and 173.)

286 [291] [177] Most of their ponchos are copied from those of the Bolivian half-breeds.

/432/ The type of loom prevalent among the Chiriguano is the one which has been given the name Arawak loom. Plate LXXII 2/A gives an idea of it. Two forked sticks are set in the ground. They support two /Fig. 87 appears here/ parallel crossbars, one of which, the lower one, is a pestle of hard and heavy wood. The warp threads are rolled around them, but at each circuit turn back on themselves after going over a /433/ small cord stretched parallel to the ground. Once the cloth is finished, this string is removed, and in an instant the piece of cloth, which until then formed an endless band, opens up (Fig. 91). 2/A

2/A [See P. 244--Analyst]
3/A [See P 295 -- Analyst]

Chapter IX

Basketry and Its Techniques

1. General Considerations

C Ce 285 [171] Basketry is far from being as abundantly represented among the Chiriguano and the Chané as among the Indian tribes of the Amazon basin or the Guianas. The secondary role it plays in their industry is due to the nature of the soil where they live and the climate they enjoy. Palm trees with pinnate leaves are lacking, C Ce 137 to my knowledge at least, over the whole extent of their territory; as for the ones whose leaves open like fans, if they are numerous in certain places, their occurrence is far from being uniform. The palms which the Chiriguano Indians call karandaí (Copernicia australis) form veritable groves here and there, whereas over vast regions they are lacking or appear only sparsely. I saw a considerable number of them Gu [285] [482] → between San Luis and the Saladito River, and I have crossed some large palm groves between Yacuiba and Villamontes, on the Pilcomayo, and south of the Parapití River, going from Cuevo to Pipi. I noted, moreover, that the distribution of C [824] [137] [285] the karandaí coincided with that of a certain type of basketry (twilled work /named in English/), for which the Indians use these leaves.

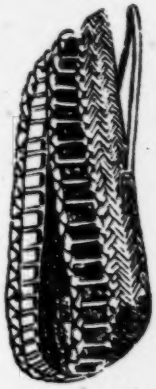

Fig. 97. Back basket used by the Guarayú Indians for transporting heavy loads (from Nordenskiöld).

Gu 285 482 Nordenskiöld (10, p. 169) recounts an anecdote which illustrates well the influence the environment exerts on this industry. At the time of one of his trips into the Chaco, the scholar was Gu [171] accompanied by several Guarayú Indians, who followed him as far as Chiriguano country. The Guarayú customarily load their baggage and the products of their fields into back baskets of a special type (see Fig. 97) which have a wide distribution in tropical America, from the Guianas to Paraguay (Nordenskiöld 11, p. 171 and Map 21).

Gu 285 482 [824] /439 cont./ p. 171 and Map 21). Their baskets being in bad shape, the Guarayú wanted to make some new ones and were very annoyed not to find in the region into which they had come the palm trees with pinnate leaves which they were in the habit of using for this purpose. Now, Guarayú and Chiriguano are brothers in race and language and emigrated at the same period from Paraguay to settle in the vicinity of the Andes. When leaving their country of origin, both were acquainted with this type of basket used by their ancestors, the Guarani, the Tupinamba of the Brazilian coast, /440/ and still favored among their first cousins from Paraguay, the Kainguá (Métraux, 2, p. 206). The disappearance of this cultural element among the Chiriguano is due solely to the lack of appropriate raw materials.

C Gu 285 482 174 824 [144] [197]

C 177 482 In order to make up for the absence of back baskets, indispensable to a farming people /Fig. 98 appears here/ the Chiriguano borrowed from their neighbors in the Chaco, either the Mataco or the Choroti, the carrying nets (in Chiriguano: añapoka) whose use is so widespread among the latter and is so characteristic of their civilization. Carrying nets today are in general use among the Chiriguano, and in every village each family has at /Fig. 99 appears here/ least one (Figs. 98 and 99). In spite of this wide diffusion, the Chiriguano añapoka betrays its origin by its form and technique (see Figs. 100 and 101 /see pp. 283 -285/), which are both found in the tribes we have just enumerated (Nordenskiöld, 9, p. 208, Technique I). Although considerably more advanced on the way to civilization than the seminomadic tribes of the Chaco, the Chiriguano do not by any means equal them /441/ in the art of making nets. The añapoka I collected cannot be compared with the deep bags which the Matako or the Choroti, for example, make for the same purpose. In the village of Machareti, where Toba live with Chiriguano, it is the former who furnish the latter with the /Fig. 100 appears here/ carrying nets they need (see Fig. 99 /see p.282/) (1).

C [171] C [286] C [563] [439]

C 286 482 171 1. Nordenskiöld (10, p. 163, Fig. 49 A) gives the detail of the technique of a Chiriguano carrying net. This technique is not found on any

[Text continues on p. 283]

/453 cont./

285 [531] [171] Another point of contact between the basketry of the Chiriguano and that of the Indians of the east and north of South America is the occurrence of baskets in twilled work in which elements of two colors are combined, following a changing rhythm, to produce geometric figures. The basket of Plate LXXVIII, with the frets standing out in black on the sides, is representative of this form of art, which, in the Guianas, shone with a lively brilliance.

Baskets of the pegall or "telescope" type are divided into two categories according to the principle of their plaiting. To make one kind (Plate LXXIX and Fig. 111), the basket-maker began by crossing the warp elements with one another in such a way that they radiate from a single center. Then he interlaced according to a binary rhythm the rigellas which /454/ left the common center like so many rays. Baskets of the second category have been plaited by intermingling the elements of the warp and woof at right angles so as to make the bottom without any precise point from which the elements come away (Plate LXXX, 2). The photographs (Plates LXXIX and LXXX, 2) show what I mean better than any description.

[824] The stalks which serve for the fabrication of baskets in twilled work are taken from the leaves of the karandaí palm (Copernicia cerifera Mart. or Copernicia australis). The leaves are cut into fine strips and softened by immersion.

Sieves and fire fans belong in the basketry called twilled, but I shall deal with them in a separate chapter.

Description of baskets in "twilled work"

Plate LXXVIII, Figures 1 and 2. Height, 7 centimeters; diameter, 17.5 centimeters. Provenance: Caipipendí.

This basket belongs to the category of those called "telescopes" or /Fig. 110 appears here/ pegall of Guiana. Plate LXXIX which shows us the detail of its upper surface also indicates its technique with sufficient clarity so that no diagram is necessary. The warp is composed of 32 flexible elements radiating from a common center. They begin by interlacing for two rounds; then,

I A [See P. 308 - Analyst]

/458 cont./

285 I was present at the making of a sieve at Caruruti in the Caipipendi valley. Here is what I noted about it: "The raw
• [824] material is furnished by the leaves of the karandai palm (Copernicia australis), which is cut into fine strips. The plaiting is done very simply: they form a square by crossing at right angles the elements of the woof and warp, following the rhythm of 1 (one element over, the other under, etc.) In order to slip in the woof elements, it suffices to raise each time all the strips

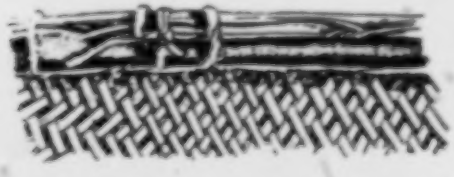

Fig. 115. Detail of the rim of the sieve of Plate LXXXIV, 2.

of the warp which have already been crossed by the woof. When the sieve is plaited, they choose a straight, flexible branch and carefully split it in two. Each of the two halves is bent into a circle so that one of the hoops can fit into the other. The unplaited elements of the warp and woof are inserted between the two hoops (see Fig. 115), then securely tied. Since the hoops have a diameter a little smaller than the width of the woven square, the result is that when it is fastened into the circle, it bulges out. All the ends which stick out are cut off."

285 283 The string used to attach the sieve to the hoops is made in the following manner: "The bark of a tree (embira) is taken off in wide, long strips, in turn divided into finer lengths. They take two of these lengths, moisten them with saliva, and roll them on the right calf, each one separately, then the two together. When the cord must be of a certain length, they have to add new pieces. These splices must be made without changing the diameter of the cord and without any gaps. For that they are always careful

/460 cont./

Fans or Fire-blowers

C 372 184 [171]

Great was my surprise when upon arriving in the Chiriguano villages of the upper Pilcomayo region I found fire fans identical with those of the Indians of Brazil and the Guianas. Nordenskiöld (10, p. 56) barely mentions them and insists on their rarity. The fact is explained by the absence of this cultural element in all the rest of the zone inhabited by the Chiriguano. In most of the villages they use old hats or fragments of baskets to fan the fire.

C 372 285

Plate LXXXV. 3/4 Length, 28.5 centimeters; width, 31 centimeters. Provenance: Saladito.

The making of these fans is rather simple. The leaves composing them cross in a rhythm of two. On the edge the stalks have been bent back and, passing again across the fabric, are interlaced to form a pucker on each side. The free ends /Plates LXXXIII-LXXXV appear here/ /461/ have been plaited on top and one part passed into a split stick forming the handle (Fig. 117).

C [171]

An important remark must be made on the subject of these fans. They /Fig. 117 appears here/ differ little from the fans made of a single pinnate palm leaf, such as are found in Brazil and Paraguay. The Chiriguano, having no palm trees of this C [824] species in their new homeland, had to /Fig. 118 appears here/ adopt the palmate leaves of the karandaí. They replaced the petiole, which forms the handle, with the split stick to which I have alluded. (Max Schmidt, 2, Figs. 106 and 107, pp. 219-220.)

C 285 353 797 [824]

/462/ "Flowers"

On feast days the Chiriguano of the Franciscan missions decorate the church with artificial "flowers" which they make from leaves of karandaí palms. These decorations are of ancient origin and derive directly from the straw amusements /jeux/ still made by the Indians in various /Fig. 119 appears here/ regions of America, notably in the Guianas. The natives of the G 285 353 latter region often hang them in their houses where they perhaps 3/4

[See p. 322 -- Analyst]
[Text continues on p. 324]

/467 cont./

302 The women never cut their hair according to the custom of the other Indian women of the Chaco, so they have heads of long and remarkably soft hair. They gather their hair together on the nape of the neck by means of a red or blue ribbon, which they knot on the forehead after passing it around the head (see Plate VI, 1 and 2 /see p. 73/).

302 515 824 412 388 Chiriguano women are extremely meticulous about their hair and wash it nearly every day. For soap they use ñitira seeds,

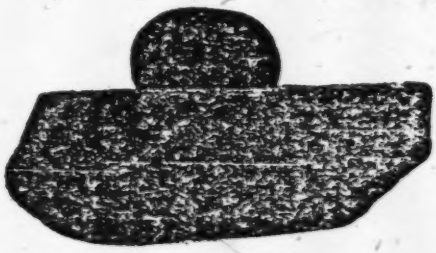

Fig. 122. Chiriguano stone mortar for crushing ñitira seeds. Prov.: Ivo. (About 1/4 nat. size.)

which they crush in a little mortar (Fig. 122) especially intended for that use. The ñitira seeds, rich in saponin, lather easily.

302 For me it was always a pleasant spectacle in the morning to see the women come back from the river with their hair twisted on the front of the head and fastened into a conical chignon. They would let it dry, then would begin to comb it slowly until it was soft and shining.

412 303 184 Two types of comb coexist among the Chiriguano. On the upper Pilcomayo in the Igüembé valley and in Ivu, they are carved out of a small board, and often the flat part which serves as the handle is cut out /468/ with art. In the Caipipendí valley and among the Chané, besides combs of the preceding type there are others composed of fine splinters of wood wedged between two splinters of bamboo and held in place by a clever plaiting of cotton threads forming a design.

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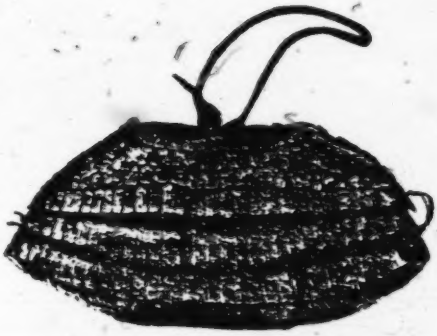

Fig. 130. Armadillo shell (tatu-pire) in which Chiriguano women keep objects for needlework, small pieces of cloth, etc. Prov.: Saladito. (About 1/3 nat. size.)

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Fig. 131. Bull's testicle (toro-upía) which the Chiriguano hang up in their huts as a small container. Prov.: Saladito. (About 1/7 nat. size.)

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Fig. 132. Broom made of karandaí leaves (tupisa). Prov.: Yumbía (upper Pilcomayo). (About 1/4 nat. size.)

532 /480 cont./

Figure 11. Guanaco (José Miguel).

[821] Figure 12. (A): blue jaguar who lives in the sky (personification of the spots on the moon) getting ready to eat the moon (B) and the sun (C), thus bringing on an eclipse.

Chapter XIV

The Treatment of Illnesses

Sorcerers and Remedies

756 178 Sorcerers. Medicine men have become so rare among the Chiriguano that I could not get to know a one during my whole [123] trip. Only on the upper Pilcomayo did they allude in front of me to a talented paye who lived in a nearby village.

Although great sorcerers endowed with supernatural powers and surrounded with great prestige no longer exist, there still must be in each village a man or woman capable of curing certain illnesses and of pronouncing incantations.

A scene I witnessed at Timboy (Salado River, upper Pilcomayo) demonstrates well that the profession of sorcerer, less important though it may be, has nevertheless not disap- [122] peared. I was living in the home of a Bolivian half-breed whose child's body was covered with purulent pimples. His parents began by appealing to my medical knowledge, but I declared 75 myself incompetent to treat this case or any other. They then [824] called an old Indian woman, who appeared one morning with a plant in her hand, a kind of wild pumpkin which the half-breeds call sandía del monte. This plant, crushed and mixed with hot water, is used for external washing. They stretched the child out on the ground and commanded him to hold himself motionless. The old woman sat down near him and began to mutter inaudible incantations which she interrupted only to spit often on the limbs of the little patient. Then she would take up her recitation again, at the same time spreading the saliva over his body from head to feet. Nordenskiold (5, p. 44,

/482 cont./

Judging from this text, the Chiriguano sorcerer, like his Tupinamba or Siberian colleague, put himself into a state of trance so that his spirit, free from corporeal bonds, could go to engage in battle with the soul of the evil-intentioned individual who is implacable against his patient.

The hupia, that is, the magical force, is indispensable to one who claims to be a good sorcerer. At least this is the meaning I give to this word translated in the Diccionario Chiriguano-Español y Español-Chiriguano etc. (p. 73) by: "remedy, antidote," but of which it is said that possession is indispensable to every medicine man. This word suffixed to any noun whatever expresses the faculty, the power, the facility to make or obtain the thing signified by the noun. Thus a dog trained to hunt deer is wasu-rupia (wasu: deer), a warrior is tuwaiso-rupia (tuwaiso: enemy), etc.

Fig. 137. Calabash containing snake fat. Prov.: Saladito. (About 1/2 nat. size.)

Remedies. 1. Snake fat (mboikira) is efficacious against leprosy. The Indians keep it in a small calabash sealed with wax (Fig. 137).

2. A little cotton impregnated with castor oil (yandi) and rubbed on the skin is an excellent liniment for rheumatism.

3. A similar virtue is attributed to chicken fat (Fig. 138). In everyday life they resort to chicken fat or castor oil to anoint the body, which they then rub with roucou paste. Women generally have their

Fig. 138. Section of bamboo containing chicken fat. Prov.: Caipipendí. (1/2 nat. size.)

1: Métraux--364 E-5 (1929) 1930 SF10 Chiriguano SF10

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Fig. 139. Small bag made of corn husks, containing roucou paste. Prov.: Salado grande (upper Pilcomayo). (About 1/2 nat. size.)

Fig. 140. Calabash containing roucou seeds. Prov.: Caipipendí. (About 1/5 nat. size.)

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757

Fig. 141. Case containing a fox penis (aguara-kankuy). Prov.: Ibopeytí. (About 1/3 nat. size.)

/484/

However, these awls are too abundant in each village for their use to be only sacred. It is probable that the Chiriguano use them as a simple tool for solely secular purposes.

At Tilcara, Debenedetti (2, Fig. 176, p. 232) discovered specimens made of deerhorn identical with our Chiriguano examples.

8. I have in my collections seeds whose virtues are multiple: they are an excellent remedy for skin eruptions, ulcers, and toothaches.

9. For stomach-ache the Chiriguano recommend the absorption of particles of wood (mboipinda).

10. Certain seeds (of a graminaceous plant?) when crushed give a paste or powder with which they treat animals whose sores are attacked by worms.

11. When cows' hooves tend to work loose, they bathe them with fragments of limestone (itakwi).

12. Fat extracted from a cow's foot is an effective ointment for cases of rheumatism.

13. The beak of the toucan is said to enjoy great medicinal properties. They grate it and drink in water the powder which comes from it (Campana, 111).

Stitches in the side and dysentery are treated with a piece of armadillo shell burned, ground, and dissolved in water, which the patient drinks.

In the Diccionario Chiriguano-Español y Español-Chiriguano etc. (passim) and Nino's book (pp. 288-290) is found many a very interesting piece of information on the pharmacopoeia of the Chiriguano. I shall summarize them in order to complete my own observations.

1. The oil which floats on kāwi, when it is done, is a good remedy for headaches.

2. Salt, ground and drunk mixed with the urine of a small child, quiets stomach pains.

3. Rheumatism is doctored by applying on the ailing part a branch of ulala (ñankawina) from which the thorns have been removed and which has been heated.

/484 cont./

4. To stop dysentery, one must drink a decoction made of corn and watermelon seeds ground together.

5. Stitches in the side are treated by drinking a fragment of armadillo shell ground up and by rubbing the ailing place with a portion of this same calabash heated.

6. Tumors and swellings of the throat or knee are made to disappear by applying on the sore region the leaves of a shrub called urukuna, heated in a pot. Another herb (yundurimbiu) has the same virtue.

/485/ Urukuna leaves put in compresses on the skull dissipate headaches, protect one from congestion, and cure erysipelas. The leaves of yandipa (hediondilla) have all the virtues of urukuna.

7. Hemorrhages are stopped by means of latex or the roasted leaf of the liana supuapempe.

8. Kaa-upaya is an efficacious herb in cases of stomach ailments; and soto root cures pains in the feet (rheumatism?).

9. Guaya is a liana which cures any swelling in the side.

10. Goiter, rare among the Indians, is attributed by them to the sun. They treat it with tutía, a yellow fruit which reminds one of an apple, or by putting around the neck compresses of the blood of the gallinazo, carancho, or bandurria, kinds of vultures.

11. Ophthalmia or conjunctivitis is doctored with drops extracted from the bark of the algarrobillo or with the glue taken from the bud of the membiría plant. The leaves of yandi-wope are excellent for cases of ophthalmia.

12. A variety of caraguatá makes diarrhea stop.

13. The flower káa-ro (bitter herb) cures skin eruptions and is as good for malaria.

14. The herb inái (tooth of water) is a remedy against whooping cough, which can also be treated with an infusion made of boiled or roasted wasps and drunk warm.

15. Tingi bark attached around the belly is excellent for fighting dropsy, as are the leaves of the aŷuru (palo de india), a tree reminiscent of laurel, or the herb kaa-paye, taken as an infusion.

164 /485 cont./

757 16. Gonorrhea is treated with the boiled root of the
824 mistol and tapir fat.

[237] 17. Earaches pass away if drops of chicken, beetle, and cicada fat are poured into the auditory canal.

18. The root of chirimoya del monte (aratibu) is a good antidote if one feels poisoned.

752 19. Snake bites lose their seriousness if one applies some
824 of the herb ururuu, guaje, tobacco, or nicotine on the wound.

The sap of the liana isipo-poro-mboyi, although poisonous, nonetheless constitutes an excellent antidote for the same cases.

752 20. By putting melted wax on the wound, you do not risk
237 dying when a mad dog has bitten you.

21. Wounds produced by a sharp instrument heal if burned chicken feathers are spread on them.

757 22. It suffices for a woman to drink the powder of a shell in water to put her fallen uterus back in place.

/486/

757 23. The red leaves of the añankamisa, iwira-ro (quebracho
824 cacha) bark, the woody plant toba-pitše, taken as infusions, are as many remedies for fever.

[752] 24. Compresses of kaa-ruruntirái make abscesses burst.

25. In case of constipation it is good to drink the latex of the kaa-si (cardencha, lechetresna).

752 26. After any serious fall one must drink water in which
757 one has made an infusion of a sort of vervain (kaimberai)
824 pounded beforehand. The consequences of the shock will not be felt if one applies on the sore regions poultices made with this same plant carefully ground.

27. Recommended for spreading on sprains are cara guatá leaves or a thick glue obtained by boiling the bark of iwira-pitiyu-wasu. This substance is equally good for fractures.

757 28. The Chiriguano chew the bark of iwira-pitiyu-wasu to make
824 their violent toothaches stop and to make their teeth more solid.

29. A cataract is doctored in the following way: One boils kuruwa leaves and bathes the patient's head with this infusion.

[237] Then one takes the gall from the dorado fish with pincers or

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757 824 237 some similar object and rubs the sick person's eyes with it until the cataract comes off.

30. The tannin contained in kurupaî bark is a disinfectant which hastens the healing of wounds.

752 757 824 31. The leaves of kurupaîraî (small sébil), squeezed and put into compresses on a tumor, act in a lenitive way.

757 824 [302] 32. The plant wambero (kind of purslane) is a laxative. It has a scarlet flower which girls dry and pulverize to be able to color their cheeks red.

33. Iwowi bark, pounded and roasted, is a good remedy for any pain affecting the limbs. The ash taken from the pips of this [752] tree hastens the healing of wounds.

34. Powdered inâi seeds make teeth fall out.

35. The root of the isipo-poro-mboyi, ground and kneaded with salt and tallow, is an emollient which is spread on tumors.

36. When they feel pains in the limbs, the Chiriguano apply on the ailing part a poultice made of iva-wasu roots, crushed and roasted.

37. The seeds of the yandi-wasu, taken in doses of two or three, are a good emetic.

38. The sarâi is a tree reminiscent of our walnut tree. Its inner bark yields a powder which is spread on skin eruptions.

39. A climbing plant called kaa-ruwa is supposed to have medicinal properties. /487/ It is taken in the form of an infusion, or poultices are made with it after it is pounded.

40. Another climbing plant, the kaa-tai (barba de chivato) is a very active caustic which can produce burns if the compresses made with its flowers, leaves, and twigs ground together and mixed with water are kept on too long. If the hands are rubbed with this plant, they become numb.

41. The roots of the shrub mboipina, well cooked, yield a broth which combats atrophy.

757 825 42. A species of bug (tambeyùa) is used in the native pharmacopoeia as a caustic.

757 271 43. The Chiriguano have great faith in the virtue of hot water. Every sick Indian has beside him a small vessel the size of an egg, full of hot water. Those who are attending him

2:Métraux E-5 (1929) 1948 SF10 Chiriguano SF10

Chiriguano women still dress in tipoys, a long, sacklike garment, fastened on both shoulders with thorns or sometimes with luxurious silver pins (pl. 42, *right*). Some tipoys (tiru) are so long that they need to be folded. 291

Anciently, *Chiriguano* men shaved their foreheads, as did the *Guaraní* of Paraguay. At a later period, men and women wore their hair long and carefully groomed it with combs. These were artistically carved from a single piece of wood; some of them were cut into the shape of animals. Men wrapped their hair around the head and kept it in place with a headband. 302 412

Women part their hair in the middle and tie it over the neck with a tasseled fillet, or with a ribbon across the forehead.

Body painting.—Both sexes formerly painted their faces and their bodies with urucú. In more recent times, women were content to smear their cheeks with urucú before taking part in a feast. Men stained their teeth black with a special grass. 302 178

Ornaments.—The distinctive ornament of the *Chiriguano*, even in modern times, is a tin labret studded with turquoise fragments (pl. 43; fig. 59, *e*). Originally, labrets were made of rosin, as were those of the *Guaraní* of Paraguay. Wooden labrets or a piece of reed inserted in the lower lip remains common among children and also among men too poor to acquire a metal labret. Some of the round tin labrets are more than an inch in diameter without including the flanges which hold them on the inside of the lower lip. 301 178

Feather ornaments almost disappeared after the migration and were replaced by typical Andean woven frontlets studded with metal plates. Men hung elongated silver plates from their necks; these ornaments probably originated from small metal tweezers worn in the same fashion (fig. 59, *a*). The most valued necklaces are composed of turquoise or chrysocolla beads which are traded from the Mestizos of Tarija or taken from the sepulchers of the people who preceded the *Chiriguano* in their habitat. Ordinary necklaces were once strung with shells or seeds, but now consist of glass beads. 301 177 [439]

Miscellaneous.—The *Chiriguano* have the deserved reputation of being among the cleanest Indians of South America. Men and women bathe several times a day, washing themselves with crushed fruits containing saponin. Soap is in great demand throughout *Chiriguano* territory. 515 824

Men depilated their faces and bodies with metal tweezers. 302

TRANSPORTATION

Boats.—The rivers in *Chiriguano* territory are not suitable for navigation; the only watercraft are crude rafts used to cross the Pilcomayo River. 501

/3 cont./

133 The lakes are natural, but not permanent; they are
[135] many and large; in some the water is very good, but from
others not even the cattle /4/ drink, because it contains so
[132] much saltpeter. They all receive water from the sky, which
sometimes falls with great force and fills them at a single
time. White Christians are now making artificial lakes,
especially in the Gran Chaco and in the vicinity of Caipipendi.
271 When water is completely lacking, the Indian scratches the
824 ground, looking for the root of the "sipoy," samolo, which is
as large as a watermelon; he cuts it at the top, squeezes the
pulp with his hand, it turns to water, and he drinks; thus the need
is met, but when this drink is taken for a long period, it gives
rise to sickness.

311 The land lends itself to farming and to cattle raising,
312 but both industries diminish in those years when the beneficial
433 action of the rains is scarce. Then the crops are lost, and the
132 cattle die from lack of food and from the great amounts of
water that they drink from the rivers and lakes on whose banks
they stay through lack of energy; nonetheless this rarely hap-
pens throughout the region, which, because of embracing a
wide area, in one place or another receives showers which re-
new nature.

Extent and Area

131 The Chiriguano tribe or race was extremely numerous and
[161] thus once took in an extraordinarily large area; traces of these
[464] Indians are found in the vicinity of Tarija, and they may be
found beyond Santa Cruz, where even today Chiriguano men and
women are in larger part those in domestic service with the
genteel families. Toward the capital of the Republic the
Indians still remember that their grandparents used to live in
Tacopaya and even beyond, in Talisco, included in the same
district. Then they extended toward the Bermejo River and,
finally, eastward to within a few leagues of Carandaiti, where the
arid zone, inhabited by the Toba and other savages, begins.

824 /16 cont./
139
[14] I am going to make a brief list of some trees and plants which I know, without pretending to be a botanist, a subject I have not studied. I shall only say that I have learned it through experience and careful reading; when describing certain plants, I shall also make note of the use made of the bark, root, leaves, and branches of some.

ACACIA BALSAMICA. -- This is the quina-quina, under which name it is known here in Chiriguano country, a tall, straight tree, whose wood is ideal for building because the wood borer does not damage it; it is much used here in the construction of upper roofs, especially for the braches or trusses on which the roof frame is to rest. It is plentiful in Cordillera Province and even in Acero Province.

/17/ ACACIA SAPONARIA. -- This tree is large and its
[342] wood light, perhaps even lighter than cedar, but it is of less
[492] value; it is whitish and much used for making doors and windows, but the main use to which said wood is put is in saddleries to
[296] make pads for saddles. The seeds are similar to monkey ears
[515] and are good for washing clothes and to keep the skin of the face free of blemishes; here it is known by the name "timboy."

ACACIA AMARILLA /A. moniliformi/. -- It is a medium-sized tree of rather lightweight hardwood, for which reason drawers or wash basins and yokes for oxen are made with it.
[372] It is no good for making fire, because it smells when it burns from which it gets the Chiriguano name "Tatane," fire that smells; the wood is yellow.

ACACIA ASTRINGENTE. -- There are many groves of
[342] trees of this class here and there; it is the most abundant tree,
[281] the wood is good for small joists because the wood borer does not eat it; the bark contains much tannin, and it is the wood most used for tanning hides by both Indians and whites; the latter call it sebil and the former "Curupau."

245 ACHIOTE. BIXA ORELLANA. -- This is cultivated in
137 fields and gardens, grows to a height of two and a half meters,
824 its leaves are dark green; it produces abundant fruit in a sort of pod covered with bristles and filled inside with fiery red seeds, which are what makes the little tree highly valued. They
[302] serve as food coloring, and the Chiriguano paint their faces
[303]
[439]

/17 cont./
and feet with them, as will be seen; for this last purpose it is prepared beforehand, many pods being boiled in an olla, and pastes of every size are made from the decoction, depending on the value that they wish them to have; it is traded by Chiriguanos and whites.

The Bixa orellana, or "Urucu," as the Indians call it, is a plant of high value for the Chiriguano; he will travel far to obtain a small amount in the towns or places where it is prepared.

ALGARROBO. -- The place where this extraordinarily large tree abounds is in the pampas; thus in the plain of "Curuyuqui" of Yvu Mission, Isoso, Parapiti, and the Gran Chaco it is found forming forests. It is very bulky and has long branches which on some touch the ground; its trunk is thick and not always erect, the wood is excellent, similar to oak in spite of being dark, and it is much used for making tuns, door and window casings, and even for barrels. In Chiriguano this tree is called /18/ "Ivopei," and the "Ivope" pod is long, compressed, and yellow; when it is ripe, it is sweet and much sought after by livestock and by the Chiriguano; it is their food and drink in times of scarcity as well as other times, and the mead that they make is extremely intoxicating. On the bank of the Pilcomayo even the whites eat this pod; the Toba, Choroti, Mataco, and others hold their orgies when the algarrobo ripens.

ALGARROBO CHICO. -- This is a smaller tree than the previous one, even its fruit is smaller, speckled in color, and sweeter than the true algarrobo, but not as abundant as the first. As the pods are small and the seeds within abundant, it is not highly thought of among the Chiriguano; they only eat it out of necessity or as a tidbit; the wood is not valued very highly because undoubtedly there are others that are better. In Chiriguano it is called "Ivope rai."

ALGARROBO AGRIO. -- This is also small, and it is called "sour" because the flavor of the pods really is sour. In times of scarcity it is also food for the Chiriguano; the pods are small, and the tree has its congenial sites. The Chiriguano Indians call it "Ivopetayi."

/18 cont./

137 ALGARROBO NEGRO. -- Among the Indians this is
●824 called "Ivopene," and the whites call it tusca; it multiplies and grows very fast. Sometimes 20 or 30 newly sprouted plants can be counted around a single cake of cow dung, which indicates that the cattle eat it in abundance, and where it does not already exist they sow it with their bowels.
[262] It grows to a height of some three meters and is very thorny, which makes it difficult to travel through places where it is abundant; when there is no other food it is one of the Chiriguano's resources.

[322] ALGAROBILLA. -- The wood of this plant, which the Chiriguano call "Igũirayepiro," is black and very good for cabinetmakers; it is a species of ebony and is strong. Implements of war and those for fiestas of the tribes are made of this wood; its trunk is twisted, and it rarely has a single trunk; the flowers are yellow and the berries much sought after, by goats, but it makes them abort.

ALGODONERO /cottonwood/. -- This is a leafy tree with many branches; it grows to a height of two meters, has yellow flowers and a white boll when it is ripe, which is then picked, dried in the sun, the material pulled away from the seeds and cleaned. The "mandiyu" cotton is very useful; hammocks, ponchos, saddlebags, and sacks are made with it; it would even be easy to manufacture macana, but this is not done because what comes from outside is very cheap and /19/
[757] showier, even though it is not as strong as the other. Its leaves used as a poultice are anticancerous, and its seeds in the form of a pomade work against herpes and skin eruptions; oil for lighting can be extracted from the seeds.

ANNONA. -- The annona is a bush which grows to barely one meter; it has congenial places, the pampas, which have soil mixed with sand. In the said pampas it thrives in abundance, but it is even found in other places. The ripe fruit is red and like the pineapple in shape, but the pulp and seeds are like the chirimoya, as is the flavor of the pulp. Before it ripens, even the skin is very similar to that of the chirimoya. The Chiriguano call it "Araticu."

ASPIDOSPERMO BLANCO. -- This tree is of great size and it is abundant almost everywhere; the wood is white and good

/19 cont./

139 824 [759] in dry places; when dampness penetrates it, it is destroyed in a few years, as experience has shown. The bark that is found under the first layer is split, washed in tepid water, and left to steep overnight; it cures intermittent fever. The Argentinians call it cacha, the whites quebracho, and the Chiriguano "Igüiraro."

AZUFAIFO /jujube tree/. -- This is abundant hereabouts [262] and is a tree of medium size. Its wood is not valued very highly, but the fruit, the size of a grape seed and of a dark coffee color, is a great resource in times of scarcity for the poor Chiriguano. It ripens in January and February and is liked even by cattle and by sheep and pigs. The whites call it mistol and the Chiriguano "Yuá."

245 BANANA TREE. -- Cultivated in orchards and well fenced-in fields, it forms a grove, and each plant yields or produces a cluster, very large on some of them. When the ripe cluster is removed, the plant that produced it must be cut in order that the others may produce their own. There are several [262] varieties, large and small, the latter very sweet and eaten as fruit, and the former only when boiled and roasted; the whites call them plátano, and the Chiriguano "Pacoba."

139 824 [271] BIGONIA ACUOSA. -- This is a tiny little bush one vara in height, which under the ground has a large root like a watermelon and even larger; it contains much pulp which, when squeezed, yields potable water and is used for it in times of scarcity. The Chiriguano call it "Sipoi."

[342] CATALPA. -- This is a large tree and fairly strong. Its wood is used in the construction of houses. The color of the /20/ wood is dark, but when it is newly cut it is somewhat [515] green. Its flowers are purple, and the Chiriguano chew them to whiten their teeth; they are bitter and because of this the tree is called "Tayi," or bitter, in Chiriguano, the whites call it lapacho.

CEIBA. -- A large tree with deformed trunk, and furnished with sharp points, broad leaves, and large, white flowers which produce a material similar to cotton without fibers, for which reason it is smoother and shinier; it is used for mattresses [322] and pillows and candle wicks. The wood is spongy and not at [415] all hard; from it are made troughs to hold water from year to year and in this way they are not soon damaged. Its ashes

/20 cont./ Its ashes
are good for the manufacture of soap, the bark is an emetic. The whites call it toborochi and the Chiriguano "Samuú." There are several varieties and all of them are utilized to some degree or other.

CEIBO. -- This tree is smaller than the former, but its wood is much superior, very fibrous, and rather light in weight, being used to make troughs which are very durable since they neither split nor are eaten by wood borers. It is very pretty when it blooms; the flowers are fiery red and good for salads. The Chiriguano call it "Suinandi."

DRAGO /dragon tree/. -- A tall tree, straight and quite thick; the wood is strong and useful. If an incision is made in the tree, a very red resin comes out; its bark is the best for making the teeth hard and for curing scurvy. The gum called "dragon's blood" is extracted from this tree. The whites call it tipa and the Chiriguano "Güirapitiyu guasu."

ENEA /cattail/. -- An aquatic plant which abounds in certain ponds and pools formed by the water of rivers which flow away from the main stream; the Indians use it for roofing their houses, muleteers for packsaddles, and others for mats in the dwellings, on which they also have their bedding for sleeping. This is the totora or matara of the whites and the "Caipempe" of the Chiriguano.

ESTORAQUE /storax/. -- This is a very large tree of the forest; it has whitish flowers and yellow fruit the size of a fig, which is edible and a favorite of parrots and monkeys; the Chiriguano eat it as a fruit and call it "Aguai."

GARGATEA or CARICA MAMAYA. -- This tree is not very abundant nor is it found in every section. It is of normal size, with a straight trunk and smooth bark softer than the fig tree; the wood is soft and is of no use at all, being similar to that of the ceiba, or toborochi. Its leaves are like those of the fig tree, and the fruit is of the /21/ same size and form, but yellow; it is edible and good when boiled or roasted, if eaten raw, it hurts the mouth. In Chiriguano it is called "Caincantina."

/21 cont./

137 GUAYABO /guava/. -- This fruit-bearing tree is found
824 wild and cultivated; it is of medium size, and the fruit, when
245 ripe, is yellow on the outside and purple on the inside, and its bittersweet flavor is very pleasant and laxative. The green fruit and the roots are astringent; the Chiriguano know it by
262 the same name. The wood has no use at all, and even if it did, the Indians would not use it because it produces edible fruit. They regret it when any of these trees and others, like the algarrobo, are destroyed.

GÜEMBE. -- This plant thrives on the trunks of high trees, where it puts its root, and others which penetrate the ground
492 hang down from there. The roots and lianas are dark in color; very strong and durable halters are made from its bark; it is not found everywhere. One encounters it from the left bank of the Parapiti River; its fruit is similar to that of maize, for which reason it is called maize of the air, and it is edible.

HIGUERA AMERICANA /Amerigan fig/. -- This is the
262 guapoy of the Chiriguano and the bibosi of the populace; al-
757 though the fruit is rather sour, it is edible. Bats like it, and it is annoying to have this tree near the dwellings; it has a milky juice like the common fig tree, which, applied to wounds,
245 heals them. In addition to the above fig tree, there is the
439 common one which flourishes with very little care, in the towns,
431 especially the Mission ones, it is widely cultivated by the natives and its fruit is used by them for gifts and trade with the whites.

244 MANDIOCA. -- This plant is called "Mandio" or "Mandiporopi" by the Chiriguano Indians. A little book written by a Jesuit missionary of the old Paraguay missions relates that this plant was left to those Indians by Saint Thomas the Apostle who, according to their tradition, came here to preach the doctrine of the Redeemer. Mandioca is
252 an excellent food and very digestible; it is eaten boiled,
262 roasted, and fried in lard. It is a plant cultivated by whites and by Indians.

/21 cont./

137 MARA or CAOBA /mahogany/. -- This tree is found in
824 all sections. It is a strong wood, but the white part at the
342 sides is subject to decay. It is rather heavy and hard and is
352 only used for door and window casings and even for tables.
757 The leaves are permanent, but not too good for shade. If the leaves are touched with some force in order to pick them, they cause a skin eruption which disappears only when treated with bees' honey; I cured myself this way twice.

137 /22/ MELOCOTÓN /peach tree/. -- This tree, native to Persia, is quite productive in this region, but its fruit, severely attacked by the black butterfly, does not reach maturity because it always has worms. The apple tree grows in high places and where the atmosphere is not so hot, but both of these are orchard trees, not native ones, having been imported by the whites, who cultivate them, which can also be said of the quince tree.

137 MOLLE. -- This tree is not found in the central part of the
824 region and thus is not native here, being obtained only by cultivation. The whites and the Missionaries have introduced it into the towns with good results. It is found in abundance in
757 the district under the jurisdiction of Padilla; it has permanent
273 leaves, which are medicinal, as is the resin which comes from the trunk; a cooling beverage, pleasant and similar to wine, except that its odor is somewhat disagreeable, is made from
757 the seeds. The eucalyptus is another tree which thrives regularly here, but it has also been imported; its leaves, also permanent, are very good medicine for the endemic fevers; its trunk is an excellent wood. Neither tree has a name in Chiriguano, from which it can be deduced that they have been imported, like the grape vine, the common fig tree, the peach, quince, etc.

MORA OR MORERA /mulberry/. -- This tree is found wild from the left bank of the Parapiti River in Cordillera Province. It rises to a height of some 15 meters, is bulky with a very leafy top, and the fruit is smaller than that of the cultivated mulberry; the wood is solid and compact like that of the soto and has even better qualities; it is used for machines for milling sugar cane, plantations of which are common from the banks of the Parapiti River, where sugar of the highest quality

/22 cont./

139 is manufactured. On the slopes of the hills is also found the
824 blackberry /zarzamora/, whose fruit is so pleasant to the palate, but whose thorn, which is like a cat's claw, is quite dangerous and barbed. The mulberry in Chiriguano is called "Tatayigua."

245 NARANJO /orange/. -- Neither the orange nor the lemon are native to the Chiriguano region, but they flourish greatly and grow to some height. Where it is easy to open irrigation ditches and possible to irrigate orange and lemon trees, they produce large, jiicy fruit, the former being very sweet and the sourness of the latter being mild. The citron tree flourishes and is a plant imported here; its fruits are as big as gourds. The Chiriguano cultivate the orange tree here and there, but the whites cultivate it on a large scale; I know of some /23/ rather large orange groves, and they exist in nearly all the missions.

139 NOGAL. -- This tree of extraordinary height is only found
824 wild; the leaves are very small and somewhat like those of the true nogal; the fruit is edible, but its shell is hard to crack.
[258] The flavor and characteristics are the same as those of walnuts, so that oil, which is used instead of that from the olive, can
[322] be extracted from them. The wood is rather dark and good for carpentry and cabinetwork, but it is inferior to that of the true nogal, which is found in the cultivated state where there
[386] is sufficient moisture; a dark coffee-colored dye is prepared from the leaves, the bark of the trunk, or the roots, for dyeing wool, for staining other woods, and for printing ink.

NOPAL. -- This is the fruit-bearing plant which is most abundant in the region and which is found everywhere without any cultivation, for which reason it is most highly regarded by the Chiriguano, who is naturally lazy. But since it is sought
[245] by the cattle, it is beginning to disappear or, more exactly, it is not found very much in the woods and clearings, but the Indian still cultivates it because it flourishes easily without need of irrigation and multiplies without the need of planting other shoots. It is convenient for the laziness of the Indian; the yellow flowers come out around each spathe and the fruit matures there as well; it is full of small seeds and sweet pulp, pleasant and refreshing. Some trees are covered with long

/23 cont./ some trees[A] are covered with long sharp points and others are not, only having an occasional imperceptible sharp point; the fruit of both is pleasant and serves for gifts and trade for the Indian, who sells it to the whites, the ones who, rushing to get rich more quickly and easily, are little concerned about the nopal and the fig tree. In Chiriguano it is called "Saini."

PALM or PALMER. -- The palm tree has congenial places, where immense forests are formed and sometimes grow all around a lake like a great garland; it is a very tall and smooth tree without a single branch. Its leaves are in the form of a fan and are used to make hats and for sieves, which are sold for 30 or 40 centavos apiece. The wood is good for joists in houses, and it is also split into shingles for roofs and is quite durable, if the precaution is taken of cutting them after the full moon. In Chiriguano it is called "Carandai," and the place which they occupy, "Carandaiti," palm grove.

PALMA CHRISTI. -- A not very durable plant, it grows to a height of four meters, has a soft, hollow trunk, large leaves, /24/ and flowers in the form of a bunch of grapes. The seeds are found inside little burrs, like chestnuts; said burrs in some plants open by themselves in the warmth of the sun, while others must be opened or carefully broken with a little hammer or a stone. The name indicates that it is a beautiful plant, but this beauty is in the broad, abundant petiolate leaves. There are several types with reference to size and quality of seeds; I know five kinds. Castor oil is extracted from this plant or from its seeds for use as medicine; we use it in the missions to fuel the lamp of the Blessed Sacrament, and the Chiriguanos mix it with "Achiote" seeds and put the resulting cosmetic on their faces and on their calves down to the feet. In Chiriguano the plant is called "Cauiro," and the oil, "Yandi." Even the leaves of the palma Christi are medicinal, some being hot and others cool; thus when headache is a result of overexposure to the sun, the leaves of the white spurge are applied; if, on the other hand, it is the result of high humidity, the leaves of the red spurge are applied. The seeds of the dark purple spurge are very small, but contain more oil than others.

[A] [i.e., nopal trees. -Arnold]

/24 cont./

245 PAPAYO. -- This tree is neither native like the palma Christi, nor is it found wild like the latter. It is grown in orchards or in well-fenced fields, grows very fast, and produces fruit one year after being planted. Its trunk is straight, soft, and hollow; some have two or three branches and rise up to four meters high. The fruit is refreshing, yellow, with a smooth skin, of the size and shape of a small melon, even the flavor being somewhat similar, but it is more digestible. Many fruits are bunched around the trunk and are also found here and there at each leaf, but always attached to the trunk. The plants which produce the fruit are the good ones, and they call them "females." There are others which they call "males," but their fruits are useless and are not attached to the trunk, but rather hang from it like streamers. It is useless to pick them. To have a good papayo tree they assert that, in transplanting one, it is necessary to take the precaution of always putting or burying two plants in each hole, one of which will always be a female, and the one which turns out to be male will be pulled out. I do not know if this is true, but I did it this way in January of this year. The fruit contains many seeds which, [257] when ground and drunk in an emulsion, are good for getting rid of worms. The fruit and the tree have a resinous milk. [258] Therefore, in order for the fruit to be good and digestible, it is better to cut off the ends and make about five or six vertical cuts so that this resin may come out; by the next day /illustration appears here/ /25/ it is already very pleasant. It is nevertheless best to take the precaution of letting them begin to ripen on the plant itself; in this condition, uncut, they will last up to six days without going bad; then they can easily be transported great distances.

137 PASSION FLOWER. -- This is a climber which is found
824 on fences, clothing them in the rainy season with abundant
[252] foliage, as does the "supua," whose fruit is edible and good
[262] roasted or boiled, as is the leaf. The fruit of the passion flower is of the size of an apple and just as smooth, the skin is thin and the inside is found to be covered with a white, stringy membrane. When this is broken, the seeds of the fruit come

[Text Continues on P. 43]

/25 cont./

137 forth bittersweet and very good. These are ash-colored and
●824 pearly and very highly regarded by Chiriguano and whites. The blossom of the passion flower is purple, forming a garland like a crown of thorns; it has its calyx, five petals and three pistils, for which reason it is called passion flower, and it is certainly worthy of admiration. The Indians call it "Murucuya."

PIÑON. -- A euphorbiaceous plant, this little tree exists
[179] in a cultivated state and was introduced into this Chiriguano region by the white Christians. It grows in orchards and elsewhere, and its maximum height is three meters. Its small
[757] trunk is slender and top heavy, and its fruit consists of black seeds which are not edible but which, when ground and diluted in water, make a powerful purgative and therefore must be used with great care, because they can cause death.

137 SAUCE /willow/. -- It grows and develops on the banks and in the bed of torrents, as well as on the shores of streams, which shows that it seeks damp places, but from these places
[342] the force of a flood often uproots it. The common willow has no special qualities; only its branches are useful in the building of houses because they are flexible, fibrous, and not heavy; little use is made of the trunk. It is a tall, large tree with very tiny leaves. In addition to the common willow there is also the weeping willow, whose branches touch the ground; it is neither native nor found wild; some whites plant it to beautify their interior patios. In Chiriguano the common willow is called "Igüirapucu."

SAÚCO /elder/. -- It is not found everywhere, only being found along streams with little water which are in the wood. It grows to four meters in height, its trunk is slender and soft, its branches have a pith which is easily extracted, and its white flowers in the shape of a parasol are sudorific. The whites do a good deal of searching for this flower /26/ for their illnesses. Even the leaves are medicinal; when drunk in a decoction they are a good purge. What a pity that it is found in such limited areas!

/26 cont./

137 SOTO. -- This gigantic tree is found everywhere from
● 824 the province of Tomina, but there are places where it is more abundant. In the spring, when the budding begins, its leaves are red, and later they turn green. In the autumn its fruit, which the parrots like, are red and are in bunches like cherries. Seen from a distance by a European, he thinks they are cherries. The wood of the soto is strong and does not rot; in dampness or in water it is better than iron, since it does not deteriorate.
[342] It is very widely used in the construction of houses, especially when they are of frame construction. A great deal of tannin, which the Europeans use in tanneries, is extracted from the soto. It is called palo cuchi by the whites here and "Urundei" by the Chiriguano.

249 TOBACCO. -- An annual plant which flourishes everywhere, but only the whites cultivate it on a large scale, especially in Sapirangui and Chiquiacá, whose products have some fame. Even an occasional Indian cultivates it for his own use and to give to his friends. There is another similar plant, and, when he lacks real tobacco, the Indian deceives himself with its leaves. The true tobacco is called "peenti" in Chiriguano, and the other "huacapeenti," which, literally explained, means
276 "cow tobacco." In Bolivia there is considerable consumption of tobacco wrapped in paper or maize husks; rarely does one see cigars of pure tobacco, like the Havanas and others; the Chiriguano smokes a lot and acquires the habit at a tender age.
[897] Children of four years of age have already begun to smoke;
[562] women also smoke.

137 TACUARA. -- In the past when there were no cattle, the
824 tacuara, or hollow cane, was very abundant; vestiges still re-
[435] main of some immense canebrakes, but the plant has been reduced almost to the cultivated one, with the result that what was previously found in the forest at the disposal of the first occupant is found today in the possession of private parties, and anyone who is planning to build a dwelling must pay for hollow cane at the rate of 80 centavos per hundred, and the worst of it is that it is not found everywhere. This lack is made up for by small rods from trees, but these are neither as light nor always

/26 cont./

137 as straight as cane. Beyond Santa Cruz there are still groves;
824 in addition there are groves of another cane called "Bambú," which is the best known, and in Chiriguano it is called
[417] "Tacuarembo." It rises to a height of about 15 meters and is used for making /27/ ladders and scaffolding in construction
249 because it is light and strong. The shoots are tender and contain a sugary substance highly regarded by the Indians; it is not sought much today, because there are abundant plantings of sugar cane, which is of great utility for the production of sugar and alcohol. This last thrives with great ease and little work. Planting is done in two ways, making furrows and burying it or planting cuttings. The former is the better method where the
137 freshets of the rivers do not penetrate. On the slopes and tops
824 of hills which contain water there is another sort of slender cane, very strong and heavy, which is not hollow like the other classes and is called caña brava by the whites, and
[285] "Tacuarembo" by the Chiriguano. They use it for weavers'
[513] reeds and for sleeping cots.

TAMARIND. -- This beautiful and useful tree is not native, but it thrives with enough care and grows to a respectable height; the fruit that it produces is abundant, consisting of abundant pods more or less the size of chick-pea pods; the pulp is blackish and pleasant to the taste, but it is bad for
[757] the teeth. It is astringent and is administered as medicine for intestinal inflammations, especially to children. It is also
[272] a good tonic drink on excessively hot days; it is prepared with sugar, water, and a little of its pulp. The tree is rather sensitive to cold, and the flowers wilt easily with the south wind. For this reason the whites plant it in their patios, which are surrounded by the living quarters.

TARINGUI. -- The name of this tree is Chiriguano. The taringui is found in some regions, but not in others. It is of the cactus variety, rises up to six meters, its branchage is abundant and close, which gives a fine shade against the blazing rays of the sun. Its branches or leaves are striated and armed with spines; the fruit is tiny, but sweet and otherwise pleasant, and much liked by foxes, who only get it when it falls from the tree. The ulala or opuntia is smaller than the taringui, its leaves have the same form, the color is ash-gray and they are less a abundant, or, more properly, few. The fruit is a smooth berry

/27 cont./

137 824 [262] which is purple when mature and opens into three sections when ripe. It has an insipid sweetness, but one which both whites and Chiriguano like. The color is a bright purple, it is abundant, and in certain years of scarcity it is a resource for human life in the months of February and March. In Chiriguano it is called "Ñacagüina." The caraparí is another cactus, taller than the preceding ones, which also has its congenial land, /28/ since it is not found everywhere. It is admirable for its tall, striated leaves or branches, ash-gray and armed with spines; its fruit is very pleasant and also sought [342] by foxes. The trunk is soft like that of all cacti; nevertheless [759] doors are made of this wood and are durable enough. The pulp of the trunk is used medicinally to cure liver ailments, etc. They say that it is even good for goiter. There is another species of cactus which grows to some 20 or 25 centimeters; it is round and thick, striated and armed with spines. [524] In Chiriguano it is called "Zipepe." The children, as we shall see, make wheels by cutting off its spines, and, making it roll, they use it as targets for their arrows. Finally, there is another which is trailing and long, covering the ground where it grows and making the place impenetrable. This has and [262] produces a very delicious fruit which is called "Tapiacaru" in Chiriguano.

TILANDSIA. -- This plant is known to the Chiriguano [342] by the name of "Caraguata guasu." Its special place is the [283] hills, and among them it has some more congenial to it; it [492] grows well enough, and its leaves are extraordinarily broad and long and ash-gray in color; in the middle there is a thick stalk which rises quite high and is good wood for house rafters; from the crushed leaves they make cord and from these are made first-rate halters for tying up animals in the rainy season. [286] The Toba and even the Chiriguano make a kind of net which [171] they call chipa or "añapoca," which is very useful, inasmuch [482] as the women can carry any weight in a bag of that kind; from [227] the same they make nets so as to be able to fish in the rivers, and these are pieces of work which would attract attention in any part of the Old World.

/28 cont./

139 There is another small caraguata which invades wide areas
824 of land, preventing any animal from entering there, because
[262] it has spines on the bottoms of the leaves. In times of scarcity
its root is food for the poor Chiriguano; the root contains a
little starch which has the taste of mandioca, but it requires
[283] great effort to pull it up. The leaf of this tilandsia is also good
for making cord.

Finally, there is a third one which flourishes abundantly in trees and on the rocks of the hills, but which has no peculiar properties; it is large because of its leaves, which measure up to one meter in length. The plant is thick, the leaf fleshy, and it is used to decorate the streets with arches during processions. The aloe is similar to the second type of tilandsia, but aloe leaves are wide and thick, full of juice, while those of the tilandsia are slender, arched, and dry. The aloe is not abundant; only an occasional shrub or plant is found.

244 /29/ TOMATO. -- This plant which produces fruits so pleasant and useful to the culinary art flourishes exuberantly in these lands; the fruit from each plant is abundant and is produced the year round when some care is taken to protect the plant from the cold or from the light frosts which customarily
[237] fall in June and July. To do this it suffices to pile up dry cow
dung in two or three places in the tomato patch and set them
[177] afire. True tomato plants are also found in the woods, but it is presumed that some bird must have carried the seed to such places; the tomato is a plant which has been brought into the Chiriguano country, as is the case with the onion, the sweet potato, and the cabbage.

222 In the woods there is a kind of tomato in the wild state, which is somewhat similar in appearance and taste, but which is quite different from the true one; it is picked green and allowed to ripen in a room on top of a piece of wood; in a
[244] few days it turns red, which is a sign that it is ripe. The chili pepper also produces abundantly and with little care; it is a plant which lasts up to three years if care is taken to prune it, and the second and third years the fruits are very hot. Another kind of small, round chili pepper abounds in the woods and bears spontaneously; it is called arivivi by the whites and "quii rai" by the Chiriguano. It is hot, and some cure sickness,

222 [957] /29 cont./ IT is hot, and some cure sickness, or inflammation of the eyes, with it. Nevertheless, one should not confuse this little plant with another similar one whose fruits lack flavor and which is called by the Chiriguano "Aguara quii," which is to say, literally, chili pepper, of the fox. The best way not to confuse it is to taste the fruit; it is found everywhere.

243 TRIGO /wheat/. -- The Eternal Creator of all things in his bounty and mercy arranged that this small plant, necessary in every aspect, should yield its fruit in every region inhabited by man; thus, in spite of the excessive heat, it is harvested here in abundance, and the farmer is not robbed of his hopes if he takes care to irrigate the field opportunely. Barley also flourishes in irrigated lands, but the cultivation of both has been abandoned for reasons already expounded in these pages and also because birds greatly bother both crops, as also happens in the rice paddies, which will be found empty if they are left to the discretion of our flying friends.

[824] [412] There also thrives together with maize, or in other places, the wheat called Guinea, or sweet sorghum, which the Chiriguano call "Tricu" and which is indigenous; it is sweet, matures with maize, and they suck it, as well as the panicled sorghum, which is a kind of sorghum /30/ without sweetness and used for making brooms for sweeping. The seed of both plants is liked by birds.

137 824 [262] VID /grapevine/. -- Farther on I have said that this plant pre-eminently required for the Sacrifice, like wheat, thrives quite vigorously in this region. I add here that in the woods there is a tree with small leaves and unimportant wood, which rises up to some eight meters above the ground and whose fruit is the size of an olive, has a dark coffee color and a flavor like that of the grape, matures in the month of February, is edible, and is called "Ivaviyu" in Chiriguano. Also in the wild state is the native grape with its twining trunk. Its fruits are like a bunch of grapes; they are white and some even black, and they are good for the manufacture of brandy.

/30 cont./

137 824 276 YERBA DEL DIABLO. -- This is the datura which is so abundant in the countryside and fields and which is a real plague. It rises to one meter in height, has branches, broad leaves, white flowers, and fruit armed with spines which, when dry, are enough to draw blood. The leaves and seeds make one lose one's memory. In this respect I remember one incident when an Indian woman absent-mindedly or out of ignorance covered an olla of hot food with datura leaves; half an hour later she ate it and it gave her a bad headache and a short spell of vertigo. Her little granddaughter, a schoolgirl about six years old, ate some also, and she suffered a complete loss of memory and all her actions were those of a demented person, a state which lasted some 24 hours. It seems that the Chiriguano [157] do not know that this plant and its seeds and leaves are poisonous; the latter, dried, are medicinal, alleviate the effects of asthma, and are prescribed for asthmatic Indians. Christians know it by the name of chamico, and the Indians by that of "caazi," that is, painful herb.

137 824 SAPALLO /squash/. -- There are eleven species of this creeping plant, which I shall discuss in another chapter, only adding that watermelon and melon also grow here, as well as the cucumber and the beet. The "curugua" and the "curuguami" [262] of the Chiriguano are plants which are similar to the sapallo, but they climb trees and produce there an oblong, sweet, and fragrant fruit; when one enters a house, it is immediately evident if there are curugua fruits there; they are edible both green and ripe, but they are preferable in the ripe state.

I shall forgo describing many trees and plants whose [342] medicinal virtues are known; I shall take up others when dealing with medicines; however, before I forget it, I shall note here at the end of the flora that a region where /31/ there are damp places abounds in secular cedars, whose wood is used in carpentry for doors, windows, tables, etc. So that it may not be subject to rot, it is necessary to get mature plants whose color is light red; the whitish one is attacked by the wood borer; the odor of the wood is narcotic, and this property keeps away insects; its odor is similar to that of the cedar of Lebanon, and for this reason the conquistadors gave the name of cedar to this tree which the Chiriguano call "Igüirane," or stinking stick.

/160 cont./

574 The Chiriguano is naturally hospitable, and the stranger is welcomed in any hut of an Indian; he considers himself privileged to receive great persons, equals, and inferiors in his hut, which he at once moves out of in the case of the first, accomodating himself in the plaza or in the corridor, and renders him every service within his ability. The woman brings him water and cooks for him, and the man brings firewood and even takes out to pasture the animals with which he is to continue his trip.

574 178 [431] [273] If the Chiriguano has anything available, such as eggs, chickens, etc., he asks nothing for them and is quite happy if the stranger /illustration appears here/ /161/ gives him whatever he wants to when he takes his leave. If he has any of his pretasted liquor available, the first thing that he presents to his guest is a cup of this beverage. But today the situation is causing changes in their simple customs because of the refined ones of the civilized person, who has taught him to sell a chicken for as much as one boliviano. It is no longer as it once was, because his home was not respected (1).

1. Today they receive friends and acquaintances with respect and affection, because some guests or transients took advantage of the native by demanding things or persons to which they had no right.

622 527 [221] It is also a duty of the cacique to determine the time when the fiestas or public drinking sessions are to begin and their duration; these are generally held before and after planting, before and after harvest. If the rain increases and the previous harvest was very scant, the planting is advanced so that the maize will mature earlier and they will have something to drink for Easter. During the other months of the year the cacique directs the public fiestas, the general hunts for jabalíes /wild boar/, quiriquinchos, /ostriches/, deer, chuñas /cranes/, and other wild animals (2).

622 224

293 824 191 2. Whenever and wherever maize does not grow in quantity, the Chiriguano imitates the Toba

[Text Continues on P. 221]

/161 cont./

and the Mataco; thus the fruit of the chañar, mistol, and algarroba are used in the manufacture of chicha.

Subalterns

The cacique of a tribe is not alone in political, judicial, and administrative administration. In order to have a more correct administration, he, as sole and supreme authority, selects counselors and assistants, whom he seeks from among the most competent persons of the tribe. The primary advisors are whatever sorcerers there may be; these men are thus feared and hence respected by the people, who make use of them in sickness and calamity, both public and private.

Next in rank as counselors come other men to whom they give the name Igũira iya, owner of the stick or baton, according to the signification of the word and which corresponds in Spanish to hombre de mando ó autoridad /man in command or authority/. Thus they are the alcaldes, to whom the cacique hands over part of his authority with absolute subordination, so that through complaints, ineptitude, or other causes, the alcaldes are summarily dismissed and then others appointed. In each tribe there is a single alcalde who does everything, because the cacique, in his town, is better than an emperor, not having to lift a straw and spending his time in prolonged idleness.

/162/ The alcaldes in the tribes take charge of the rest of the settlers; in a search for peons they hear the sarcasms and recriminations of their fellows, and many times they definitely disobey them, even going so far as to insult them with: Mburubicha pa nde? Perhaps you are a cacique?" (1)

1. In the missions with many tribes there are as many caciques and alcaldes as there are tribes composing them. In this regard the custom of the Indians has been respected for a better and more honest administration.

/171 cont./

342 335 [476] [574] which form the skeleton of the house, but where the forest is not tall and the trees slender, nine are needed.

Once the timber has been transported with the help of his companions and relatives and they have been treated with food and chicha, the day for setting up the house is set. The center posts are first placed, with the two holes being dug quite deep; next comes the placement of the four or six lateral ones, which are much shorter so that rain will not stay on the roof and there will not be continual and copious dripping. I measured several relatively new houses, and their pitch from the ground to the ridgepole is about 42 o/o in some and in others 38, it being possible to conclude that the average is 40 (1).

1. Chiriguano houses are rectangular with only one room, which, if it is very long, has in the middle another post which holds up the ridgepole so that it may not bend or break.

[178] This proportion is maintained today by the houses in Chiriguano towns, and it cannot be otherwise, because the roof is entirely of straw and the rain would stay on it if it did not have sufficient slope. Some who by mistake build them without this proportion realize at the time of the first torrential rains, and even more in the ones, that follow, the mistake that they have made, but in vain, because /172/ it is very difficult for the Indian to correct his lack of foresight.

Once the skeleton of the house has been set up vertically, the rest is simpler to do, except for the placement of the ridgepole and the side beams; the latter can be cut in half to make it easier to move them, in addition to making finding them easier. The placement of these beams is followed by that of the rafters and the reinforcing pieces of wood to strengthen the walls. [824] The rafters are tied with bejuco or with spiny ceiba bark, which is called Samuu by the Indians and Toborochi by the whites.

/172 cont./

342 The hardest part is finished with the previous operation; a
•824 short rest is taken, and then the owner of the new building must obtain enough hollow cane, engaging for this purpose Indians who have horses. But if the cane is very far away and has owners to boot, he gathers long sticks of astringent acacia or sebil and puts them horizontally every 15 centimeters on top of the rafters with the same above-mentioned lianas. Some
[283] people, to tie the cane or sticks, use thin cords made from cowhide, but this, in addition to being more expensive, is less durable than bejuco (1).

[137] [178] [423]

1. Before the whites settled in Chiriguano country, hollow cane was abundant and had no owners; at the present time it cannot be found, and, if there is any, it is in private hands and must be bought.

Generally, before the walls are begun the house is covered with capíi, red straw, or, should this not be available, with capiáncua, straw for harnesses of beasts of burden, which is of inferior quality and very soon frays to pieces with the rain, sun, and strong winds, while the capíi may last for more than ten years.

[476] If it can be obtained by staying for a few days in a place where it is plentiful, he pulls it up there and reduces it to rather large handfuls; the gathering is done in several days, engaging Indians who own horses. When the material is in the town, he rests for a few days or weeks; he informs or invites those who wish to take part, in particular those who are closest to him by
[354] kinship or friendship. These then go about tying the capíi between two horizontal canes toward the side of the roots, forming long, narrow lines, and when they are so placed, they attach them horizontally, beginning at the bottom and working /173/ upward or toward the ridgepole, where they leave a large vent to let out the eternal smoke of their inextinguishable fires (1).

1. Now the red straw is disappearing almost completely; the destruction of this necessary

/173 cont./

342
•824 element and that of the hollow cane are due to the abundance of cattle, which destroy even the straw for harnesses.

342
574 When the placement of the roof has been completed, they all come down and gather in the hut of the friend, who, as a
[476] reward or payment for the service rendered, offers them a cup
[831] of chicha, and they drink this amidst jokes and crudities, at times very heavy, especially should maidens or women of 30 years or older who do not keep quiet pass by. But as the people know each other well and are friends, the greatest harmony reigns, and, when everything is finished, they take leave of the owner, thanking him for his gifts, and he shows them his gratitude for the services which they have rendered (2).

2. The workers only ask for chicha in recompense, but if the owner has beans or gourds cooked for them in a stew with considerable stimulant in the form of chili pepper, arivivi, it is a feast or carnival for all.

342
312 The rest of the work is done with less haste and at a more
[221] opportune time. In fact, most wait until the rainy season to do it, for then water is abundant, and this to be sure deserves the approbation of all because it is more economical and easier. Thus, taking into consideration the laziness of the Indian man
[46] and the tasks which the Chiriguano woman has, it would be expensive and quite tiresome to bring the water on their shoulders from great distances, which is avoided during the rainy season.
[356] Then during each shower not only is the construction of the walls of the new houses done, but also the repair of those which have come apart during the year, and it is very amusing to see from a distance the women around the houses with their sleeves rolled up or with the tipoy down to the waist, making holes in the wet ground with shovel or hoe, pouring a little water in, kneading the earth, forming large balls of it, and putting it between the canes which are already attached.

/173 cont./

342 The canes, or sticks, are attached in the same way as in the roof, with the difference that for the walls they are put in double order, outside and inside, so that they can serve as a support for the dampened earth, which in the end is like a [462] large bag, long and tall, around the house. This other work is done by the Indian men, engaged beforehand by the promise of chicha; next they too dig in the wet soil /174/ dampened by the rain or by water, and help the women in the operation of forming the walls.

With such simplicity, the four walls are raised in a single day, everything being completed; at the present time almost all houses have a gallery where the men and women always sit to enjoy the cool of the mornings and the evenings in friendly gatherings, a gallery which is even used for sleeping on excessively hot nights, especially when inside there is an abundance of vinchucas and other insects (1).

346
476 1. In Parapiti a school for 150 girls was built and finished in 12 hours; nothing had been prepared for this building; it was planned the day before and done at once by all the inhabitants.

342 With the erection of the gallery, the house is completely finished, and the Indian content and satisfied. In present-day buildings care is taken to place the door, or entry, at one end of the house which corresponds to the gallery, and many have two, one in front of the other, in order to have a way to the patio which they make with a fence of thorns for greater comfort.

342 The doors are of cane, which they tie together like mats,
28 but vertically, with ceiba bark or with cowhide thongs, which
[322] are more durable indoors. If an Indian can get a cowhide,
[824] he makes a door of Guayapa wood, or, as the whites call it, zacharrosa, or another soft wood, which he puts in a hole left in the construction; he makes another frame with its hinges made of the same wood, soaks the hide, and fastens it in this

/176 cont./

342
335 The post thus set up served as a central point for the new house; next he traced a more or less round circle without having any recourse whatsoever to the rules of theoretical geometry, being ignorant of its existence; nevertheless, his reason helped him enough. Having traced the circle and having secured ahead of time enough forked poles /horquillas/ some two meters high, he put them in holes some 50 or 60 centimeters deep around the circumference, leaving the entrance facing the plaza.

Once these poles have been well fixed in the ground around the center pole, the Indian, with the help of his companions and relatives, prepares rafters, straw, bejuco or ceiba bark, hollow cane or small sticks. He then begins, after an appropriate period of rest, to put in place first the rafters, tying them to each other, the center post serving as a prop, and then he ties them to the poles around the circumference, one to each pole, until he finishes. Before beginning, the precaution is taken of singeing the bejuco. The rest is done as has been described in the modern houses, but when the placing of the roof and the walls around are finished, the center post, which would only be an obstruction for the fire which is constantly burning in the center of the house, is removed (2).

• [824)

2. Singed bejuco does not rot, regardless of the season in which it has been pulled up. It is resistant and is not attacked by the wood borer. Those who use it so much have experience.

[821] Everyone knows that conical houses are very solid, when care is taken to select good wood and /illustration appears here/ /177/ to cut it during the waning moon. If the rafters have the fork downward, conical houses are much more solid (1).

[554]

1. A house in conical form among the ancient Chiriguano indicated great ability on the part of the builder and status on the part of its owner; for this reason they were owned only by caciques, rich persons, and other important persons.

/178 cont./

353 [356] Chiriguano towns attract the attention of all travelers and explorers because of the cleanliness which reigns in their houses, which, despite having a notable quantity of furnishings, are well kept up through the assiduous work of the mistress of the house. [415] [352] Jars with wide mouths are in the corners; those with narrow mouths, in which the chicha must ferment, lean vertically against the walls; the plates and spoons are on small triangular tables of hollow cane in the corners; small ollas are placed inside the empty large pots, and these in times of abundance, and even in times of scarcity, are full, some with shelled maize, others with beans and gourd seeds, and others with wool and cotton for making ponchos, blankets, or outer garments.

[824] [251] /179/ Above, at an appropriate height, they hang a mat of hollow cane or little sticks well tied together well with Ivi, or ceiba, and there they put other trifles or small things, when they do not have anything else to put there, such as cheeses and charqui, or dried meat. The mat is usually hung on one side of the house on one of the rafters by means of thongs of cowhide or other material. They are placed there so as not to be in the way of those who must pass beneath (1).

[824]

1. The Ivi is a species of ceiba, samuu, but it does not have points like the latter. There is another called Cuari or Tayipiruru, which is very straight, has very strong fibers, and is only cut at the branches in order to pull off the bark. A fourth type of ceiba is called Iviru guasu; it is large and smooth. Each type has its congenial place, like every tree.

Finally, in the corners of the house or where it is most convenient, up high, they put one or more cords, which form an angle from one wall to the other, and there each member of the family puts his own clothing and the men hang the harness of their beasts of burden. Today the Chiriguano who are not lazy are not so poor, and when one enters a house one is amazed by all the abundance of furnishings so well arranged.

/180 cont./

352 The peculiarity of the Chiriguano cots is that they are almost always shorter than the persons who must sleep on it; most of them measure one meter 60 centimeters. They perhaps have [513] this peculiarity because they sleep curled up like pigs in order to hold together better the little clothing or blankets that they [178] possess. Today they are beginning to make them longer and [237] to have cots like the whites use; the open part of the latter is closed with cowhides which they attach first lengthwise and then at the sides, equidistantly about every seven or eight centimeters, with many small squares being the result (1).

1. The cots which are made with split agave sticks are soft and preferred; in the Ivu Mission almost all make them of this material.

574 The Chiriguano man does not like to sit on the ground either;
57[illegible] when he is visiting, it would be an insult to make a man sit on
516 the ground; nevertheless for a gathering of friends they do sit
352 down where they wish and stretch out like dogs in the sun. For
322 the reception of visitors they have crude seats. They are of
[574] wood and called Apica. There are some with two places and up to four with their respective dividers; there are some for [412] men and even for children. They are of a single piece, and they are made by dint of much patience by hollowing them out with an ax. The tree should be a thick one so that the seat may have a little height and the occupant may not cut a ridiculous figure of a punchinello or clown, causing laughter [438] among the onlookers. They also use benches and chairs like [439] those of the whites; they make the latter for their own use and to sell to their fellows and to the whites. [824] The wood which they seek out for these labors is zacharrosa, because it is soft and easily worked with the tools that are available to the poor Chiriguano, who does not always have an adze and a chisel.
352 Some people also have /181/ hammocks, Quiha ó inni, but they are so old and black because of the action of the smoke that they arouse disgust (1).

524 1. For a children's game they hang in the

/183 cont./
323 size, which they /184/ call Itaisi, with which the polishing of the pieces is completed (1).

1. The operations which they also perform with the shell and with the stone are for the purpose of giving fineness to the vessels and of closing any chinks.

• [824] When they leave the piece which has been begun, they cover it with leaves of the Causíro, palma Christi, and at the time when they begin it again they dampen the edges with a small rag. This rag serves also for dampening the piece before polishing it with any of the above-mentioned tools. When it is finished and before it has been exposed to the air very long, they polish it with the Itaisi, and, when it is quite dry they fire it if it is not to have pictures on it.

531 [192] Every painted piece of pottery is called Sacuarama. The paintings are white, black, and red. The white is called Tovanti, the black Itau, and the red Itaurucu. They grind [237] up the three colors separately, dissolve them in water, and apply them with a slender feather from a chicken or other bird. The figures are varied; those of trees, animals, and men are rare; they are lines, unintelligible groupings. Without knowing it themselves, they follow a general system, and some of them make fine pieces, especially for storing water.

323 [843] In order to fire them they select a still day, and a big piece is carried to the forest, because there is plenty of firewood there and also to avoid having pregnant women coming close to watch, because their presence, according to what they [237] say, would make the vessel break. They pile firewood around it and light it, taking care that the fire does not go out before it is burning well; sometimes instead of firewood they also use dry cow-manure, and it seems that this is very good for even- [237] ness of the baking. If the pot has paintings, they let it cool a little when they take it out of the fire and then quickly pass over the pictures the excrement of the Taragüirisi, which melts with

/189 cont./

291 Clothing in the fashion of Adam is still seen everywhere. In the towns the men, and almost everywhere the women, are at least dressed from the waist to below the knee, because for work or for coolness the Cutama or tipoy, which can cover them up to the shoulders, is allowed to fall to the waist, the rest being left visible.

Gala Dress

292

For the ancient Chiriguano, the Ambícuai, doublet, was fine and festive clothing. This single name includes the Guasupi cangao, hat, the Ambícuai, sagum or frock coat, and [554] the Guasupi timbiao, breeches. Because the doublet is an object of luxury, they do not all wear it, its use being limited to the grandees or caciques, to rich men, and to sorcerers.

292 28 [824] It is made entirely of tanned skins, which are those of the wild boar, peccary, or pygmy deer. They are tanned with the bark of the Curupau, the astringent acacia or sevil, which contains a great deal of tannin.

126 291 797 Skillful men are needed to make a complete doublet like the one made in the Santa Rosa Mission by the Indian Cachupari, which, when taken to the Turin exposition, was acquired by the Florence Museum, along with the skull that I acquired in Curuyuqui and other objects, such as the Yandugua, a kind of parasol of ostrich feathers, etc., objects which the missionaries of Potosí sent along with the missionaries of Tarija (2).

2. The missionary who was charged with taking all the things to the exposition and leading the Chiriguano of both sexes, as the program directed, was the late Franciscan Father Doroteo Giannecchini.

/193 cont./

302 Another of the cosmetics frequently used by men and women
137 is the Carasapa. This is an annual plant with broad leaves, and
824 its stem grows /194/ to the height of a meter or a little more.
The color of the plant itself and of its leaves is, for about half
of it, somewhere between red and purple. The flower is large
and about 30 centimeters long, its color being the same as
that of the plant, but much brighter. There is enough of the
plant everywhere, but it is not very abundant. The flower is
somewhat heavy when it has seeds, and since the stem is
slender and flexible, the result is that when it cannot hold
itself upright it leans over toward the ground, forming an
arch, hence its name Carasapa, or arched plant (1).

[527] 1. At carnival time even the neophytes paint their faces, as do the whites. They buy face paint which the whites sell, and the infidels forsake their achiote at the carnivals.

303 When the flower and seed are in season, the coquettes do their harvesting in order to use it, and they look pretty. The Carasapa also has its preparation, without which its application would not be easy. They first grind up some white beans, sift this meal very fine, and then grind the Carasapa in a mortar with a little water, put this mixture in a cloth, squeeze over the bean meal the water which comes out, washing or coloring it, and then dry the dough in the sun, spread out on a cloth or a Cutama. The preparation is not difficult, but not all of them go to the trouble to do it, and for those who prepare it, it is a profitable item.

302 The way to use it is the same as for the achiote, but it
[531] does not have any peculiarity, and hence it is only used at fiestas and at carnival time. Maidens beautify their faces by forming two circles of carasapa on their fresh cheeks and paint their eyebrows with achiote. Formerly, when young girls wore the Atira, pompadour /copete/, at fiestas it was painted with the carasapa mixture, after having been oiled with palma Christi.

/194 cont./

302 The flower of the Guambero, purslane, has the same properties as the carasapa, but it is little used, and they content themselves with just sticking the leaves on their faces, and this only at carnival time, the result being a gay set of dancers. Finally, the Indians have a fourth cosmetic, which they call Mboiaruçu, or achiote of the viper. It is red, and they assert that it is food for the viper, hence its name. They use it by rubbing it on their cheeks, which makes them a bright red.

292 [529] [178] As noted above, the ancient Chiriguano man, Ava, and the Chiriguano woman of long ago, Cuña, at solemn fiestas and on days /195/ of general rejoicing, after having adorned their faces and washed their persons, wore the tiru and the manda, respectively (1).

1. If the Indian dressed in a tiru does not have breeches, guasupi timbiao, he wraps his body from the waist down with a shorter poncho which comes to the calf. It is also of cotton, and the women weave it. It is called Tirupeé, or sheath that warms, "alias" wrap /abrigo/. [286] [462]

The Tiru is a kind of long poncho, from which it differs because of the two openings that it has near the wrists: the hands are put into said openings and remain free for movement, and, the tiru fastened to the waist, nothing impedes the motion of the one wearing it. It is spun and woven by the women, and the raw material is cotton. The tiru differs in color, some are black, others dark red, and others blue. The first color is obtained with black mud, Tuñúñú, mixed with the resin of the algarroba, Piari; the second, with soroillo bark, Urundeibuu; and the third, with wild indigo, Caoguí (2). [286] 297 386 [824]

2. Today this is all purchased commercially, and the indigo plant, which is abundant in certain places, is ignored. They buy the indigo and the other colors, just as they buy for their poncho and their tipoi. [439] [178]

/196 cont./

292 386 824 The black tiru is first dyed with sotillo bark, and then they immerse it in a vessel which has well-steeped black mud and algarroba resin. After some time they wash it and dry it out, leaving the permanent color. The dark red is made with only boiled sotillo bark. Finally, to dye with indigo they crush this leaf and expose it to the sun's rays, then they crush it again in the same way, after which they put it in a large earthenware vessel with water, in which the tiru is immersed and comes out a light blue, but, if they want it to be like the blue of drill, it is necessary to boil the indigo.

In order to dye everything red they also use a species of onion that they call Tunpaipi, which literally translated, means feet of God and is abundant in the fields, and another 292 one called Chapi, which is found in the hills. Everything said about the tiru is applicable to the mandu of the women, with the sole difference that this is open at both ends and is attached to the shoulders with two enormous silver needles that they call Yu guasu, big needles, which are also disappearing.

301 302 [527] [515] When a woman is occupied with domestic and other work, she ties her hair up tightly with a band, Apicuá, /196/ of cotton or wool, so that it will not inconvenience her at her tasks, but when there is a fiesta, she washes her person, washes her head, combs her heavy and shining hair, and lets it loose, flowing over her body as far down as it will go (1).

[178]

1. The young women today put up their hair like the white women, making braids through which they draw a band that they call Aflopea, braided cord. The hair fastened in the old way was like a baton, since not a hair was to be seen, even horizontally, all of it being covered by the band, aflopea.

/211 cont./

853 262 There is no special food or more abundant food for mothers after childbirth. She who gives her breasts to her little one eats little and extremely poorly. Her ordinary food is parched maize, parched maize meal, bread made of the same, herbs, beans, gourds, other things of this nature, and rarely a little purchased beef, other meat from animals that died from sickness, lack of pasture, or snake bite, and, finally, game or chicken. In spite of this extremely bad food, milk is abundant in her breasts; the children are almost always hanging from them and sucking and never seem to dry them up, which indicates that they are excellent nursers.

648 464 853 Mestizo or white mothers who sometimes have little or no breast milk because of sickness or some accident make contracts with Chiriguano mothers, pay them well, and treat them better, but it seems that continued good and satisfactory nursing harms them, /212/ it also being prejudicial to the breast as well as to both newborn babies, the weaker child succumbing first (1).

1. Naturally the Chiriguano women refuse to be wet nurses for white children, because they abhor them. When through experience they learn of the sad consequences, communicated by others, they resist even more and only do it when force or the right of the stronger prevails.

Twins

845 [163] [165] Multiple births are rare, and those of two children are frequent. In the former case the newborn babies die very soon, and in the latter case one almost always lives, and many times 736 603 both live. When twins survive or through the death of the mother a newborn child is left an orphan, it is very easy for the grandmother to care for one twin or the orphaned child. [853] [824] Although the old woman may have reached or passed 60, she

/212 cont./

736 very easily manages to make the milk come down. She
603 grinds watermelon seed or sarsaparilla root, Isipocagua, and
824 washes herself repeatedly, squeezing herself over or above her
853 breasts, and makes the famished child suck continuously for several days, and in a short time she achieves the desired result. Sometimes even young women lose their milk. They then look for the root and juice of the sámolo, or cipoi, wash the breasts with this juice, and succeed in nursing their children again (2).

2. In the confirmation administered by the Bishop in October, 1909, in Ivu Mission, an old woman of some 60 years of age presented her granddaughter, whom she had nursed. She is still alive, and so is the twin granddaughter, although not very strong.

Joy and Grief

855 For the Chiriguano race their joy at the birth of a male child is the same as at that of a female child, because if the former helps his father in field chores and in hunting and fishing, the latter helps her mother in household chores, and the father as much as the grandfather very much like to eat meal which has been ground by the hands /213/ of their daughter
765 or granddaughter. If either one dies, the grief that the old
855 people feel is very heavy. I witnessed many times a mother's agonies of grief over the death of her son and the profound feeling of the father over the irreparable loss of his idolized daughter.

797 What I am going to relate will better convince my
758 readers. In the month of July in the year 1909, a rabid dog
164 at the girls' school of the San Buenaventura de Ivu Mission bit Cecilia Yaguándai slightly and Ana Yarandui and Delina Aragúndai more severely. The two latter, younger than the

/220 cont./

857 868 The boys have different ways of learning how to be accurate in shooting arrows and to be good hunters and brave warriors. In the field or in the woods they amuse themselves usefully, ambushing and taking as a target little birds and even grasshoppers when there are any, and when they go back home they give proof of their manliness by sticking the arrow into the mortar in which their mother customarily grinds maize.

857 868 526 [411] [824] When the boys gather together in the town, they learn the use of the arrow, shooting it at a wooden wheel which one of them makes roll as fast as he can. This wheel is made of a type of round cactus which grows a cuarta or a little more and is called Zipepe. The boys, armed with arrows, line up, and the best one will succeed in driving his into the soft material of the zipepe. /221/ The zipepe is at the same time a school for target shooting and a game; of the latter they have 524 others which I shall name in passing. They have the Pinono, top. This is different from that of the towns of the Republic. It is a small gourd with a hole in the middle in the upper part. When they spin it, the air produces a prolonged sound like that of little calves who are lowing very gently, and from this comes its name, Pinono.

Another game for young and old is pelota, which has a definite season. This is when there is fresh maize, or the cold is beginning to be felt. They call it Topo, and it is done with the husk of fresh maize; thus, when the fresh maize season ends, the game of pelota also ends, and they amuse themselves with many other games that they have (1).

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1. These will not be listed because this is not the subject of this chapter, and in addition it would be very tiring for the reader.

/231 cont./

881 304 [828] In general, with the method of pressing strongly on the patient's temples, the one performing the operation manages it so that the patient feels little or nothing of the pain of the piercing, according to what they say, and it is probable, because one sharp pain diminishes or makes another one feel less strong. But it is also certain that the boy, seeing himself before so many spectators and girls, makes every effort not to cry out or weep, because the Indians do not deny that many somewhat cowardly ones do shout and even cry a little (1).

1. Some boys, very fearful, when their fathers begin to talk to them about the tembeta and the need to have the hole made, run off to another tribe in the presence of their relatives, but the latter persuade them, and they return to their town.

I have asked more than one Indian and all agree in asserting that not a drop of blood comes from the hole. The day on [785] [784] which the imposition of the tembeta is done is a day of strict fasting, and they do not even let them drink a little chicha; other foods cannot be chewed by them for several days either. On some, somewhat careless ones, there is a swelling, and on [757] [824] others not. The swelling of the lip is avoided, according to them, by heating the leaves of the bush Urucuna in the flame or embers of the fire and applying them continually around the 881 hole. The cicatrization of the lip may take a month, during which time the little Chiriguano stays at home, letting himself be seen in the streets and in the plaza once in a while (2).

[759] 2. For a Chiriguano it is a great honor to put the tembeta in place on the boys, so that he asks nothing for this honorable operation; but the boy's parents make some small gift, which he receives with satisfaction.

/231 cont./

304 881 [824] Meanwhile the one who performed the operation now gives final admonishments to the boy, and he, following all of these instructions and those of his father, keeps the little tube in continual motion so that it will not stick to the flesh, and on the days that follow he begins to put around it little twigs /232/ from the bush called Yacurimbíu, food of the turkeys. When it has healed, he will cut a larger stick from the same bush and put it in alone, removing the tembetandi, and continue enlarging the hole this way little by little until he can put in a tembeta of hollow cane, which also goes on taking on larger dimensions until it seems big enough. Then he buys a de luxe tembeta and he puts it in, never to remove it again, either day or night, since it would be a great embarrassment for a Chiriguano to appear in public without his tembeta (1).

1. If the Chiriguano were to be without his tembeta while asleep, saliva would run out, because the hole is rather large in most of them.

301 [326] [439] [179] The hollow-cane tembetas are made by every Chiriguano, while those of wood and tin are made by craftsmen. In spite of there not being any blacksmiths or tinsmiths among them and as neither tin or lead nor anything similar is available, the result is that the material for making them is brought from other parts, being bought from the whites, with whom they have maintained relations since the beginning of Tarija, out of which region the Chiriguano were expelled.

The Tembeta in Other Tribes

301 171 The use of the tembeta may be another argument for the unity of the human race; indubitably the Chiriguano use it as a tradition passed on from father to son, and thus successively up to our times. The tembeta is found in use by savage tribes almost throughout the world; in Africa the Noers /Nuer/ and

/239 cont./

Old Method of Farming

241 In planting the fields which are already old, they use the same method of applying fire to the weeds and stubble that are left after the harvest; this method is even coming to be practiced by the whites and the mestizos. As far as fertilizing the land, the Chiriguano does not worry about it, because the lands are virgin and the Indian hardly plants maize on a large scale, and, if it rains regularly until the grain has become hard, the crop is abundant and the farmer has enough to eat and an abundance of chicha to drink, which is what he wants.

412 Formerly the ava had nothing but a wooden shovel and a stone ax, which is hard to find today. He obtained his livelihood with these insignificant tools; the ax served him for cutting trees and bushes and the spade for pulling up all the grass and brush. The spade was like those used by bakers for [824] [239] putting bread in the oven; it was of soto wood and was attached to a rather long handle with bejuco vines or strips of toborochi bark; the handle was always long, because the Indian /240/ neither knew nor does he now know how to bend his back at his farm chores; these spades were also made from the shoulder blade of cattle, horses, or asses (1).

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1. Baron don Erland Nordenskiold, in addition to the pots from various regions of Bolivia, sent to the Swedish museum pots made by the Chiriguano, wooden spades, and stone axes.

241 [221] Planting was usually done in the month of November, after the ground had received at least two rains. Then the Indian would first destroy with his spade the small amount of grass that had come up, and then he would notify his friends and relatives so that they might help him to plant on [476] [534] the day indicated. The cacique took part in the general planting, ordering that those under him should help one another; thus, early on the said day, at daybreak, they would

/274 cont./

Offensive War and Weapons

643 When a tribe was preparing to attack another, if it foresaw
701 that it would last longer than usual, and the cacique judged that
705 more preparations were required, in his position as supreme chief or captain general he would commission subalterns called Queremba, experts, to inspect all the armament available, and if the report of these chiefs was not satisfactory, a general order was given to make up and repair all the deficiencies as quickly as possible.

411 The bows and arrows were made in the public plaza or out-
●824 side each house; the wood which was to serve for bows was different from that for arrows. War bows measured /275/ a meter
[283] and a half more or less, and to shoot one they used a twisted cord made of pygmy-deer hide, which was both light and strong. The wood that they use even today for hunting bows is called Igũirapitiragua.

The arrows are made of different kinds of wood, but the most common are Ovei, guayancansillo /a kind of guaicum/, Yaguasíi, tola, and Igũirane, smelly wood. This last is very poisonous, and the tribe that uses it must be a very bad enemy of his opponent, because whoever is wounded with these arrows will recover only with difficulty, and the wound is a continual suppuration of illness, which slowly consumes him, almost without any hope of his being able to be helped and to enjoy life once more with his companions.

Every arrow ends in a point, and on both sides it has its edges the opposite way so that when it enters the flesh it is difficult to remove, and one who does not know how to remove it can produce a greater wound than the one the arrow made when it entered.
[283] The arrow is inserted into a little piece of hollow cane, one
[239] meter long, where it is securely attached with string made of toborochi bark, and the string is covered with a little bit of wax (1).

1. At the end of the cane, with the same string and wax, many attach a feather of a falcon or of a carcancho, not for decoration, but so that the shot may be more accurate. The feathers of these birds are more resistant than others.

/291 cont./

764 Now the funeral begins, which consists of crying as hard as possible, men and women, and shedding real or false tears. While they are crying they also dig the grave, /292/ which at most is two meters deep. The weeping lasts all night without rest and is accompanied by strict fasting, because so long as the deceased is visible, it would be a dishonor to take food. If there are young children in the house, they are taken by the neighbors or by some relative who takes care of them with all humanity through everything, since the unfortunate ones, when they see so much confusion, act stupid and go after the first person who shows them any tenderness. To wet their mouths and in order to cry unceasingly, those who attend the funeral, drink a little new chicha, if there is any; otherwise they are content with a little water (1).

●[824]

1. Those who cannot shed tears because they do not mourn the death of the deceased put chili pepper in their eyes, and with this, which they call a medicine, the tears fall copiously.

On the next day, when the grave has already been dug, they first put the deceased in the vessel, Yambúi. They also put in a small jar of chicha, a little parched meal, a flintstone, a steel, tinder, fresh maize husk, and tobacco, a live parrot or chicken, a bow and arrow, and other things which belonged to the deceased, and they close it with another jar, and if the dead person is a nursing infant, they put in its sepulcher a small jar of the [775] mother's milk. All these things are necessary for the journey to the other life and clearly indicate that the Chiriguano have an idea, although a material one, of the immortality of the soul.

764 775 Now enclosed in the funeral urn, they lower it into the hole by means of ropes, and meanwhile the cries redouble, until it disappears below the ground. The body is placed with the face toward the east, because they all want the deceased to attain glory, the paradise which is shown by the light of the sun. Placed thus, the deceased or his soul will not always be going about in search of happiness; he will run toward the sun as iron or steel goes toward a magnet.

T 433 648 167 /323 cont./

They devote themselves to planting, hunting, fishing, and raising livestock; they rarely go en masse to Chiriguano towns and even more rarely to those of the whites, to which they do little damage.

Miscellany

C 824 757 In the section "Flora" in Etnografía Chiriguana /Chiriguano Ethnography/ I described the passion flower of the Chaco region of Bolivia, which is called granadilla de monte /wild passion flower/ there. Its roots are medicinal and those with pretenses of being doctors there employ them to cure tapeworm.

There is a small tree called "Nuranti mbucu," long thorn, by the Chiriguano, and meloncillo /small melon/ by the whites of Santa Cruz. It grows three or four meters high at most; when it blooms, its tips are a quite light purple; its roots are put on to boil for a period of one and a half hours, and the clarified water is an effective remedy for treating dysentery.

C 122 The Franciscan school /colegio/ at Potosí, the Reverend Father Prefect of Missions, and the Padres Conversores of the same school deferred to my suggestion that they /324/ help me in publishing the Etnografía Chiriguana, for which I thank each and every one of them from the bottom of my heart.

I extend in these pages the same thanks to a group of gentlemen from the city of Sucre, who, encouraged by Doctor Don Tomás Arana, assisted in the publication with a subscription of ten bolivianos per copy.

Finally, special thanks have been earned by two young ladies from the city of Sucre and another from the city of Oruro, who, through special deference to the author, have favored him with extraordinary alms, without imposing upon him any obligation whatsoever.

5:Nordenskiöld E-5,4 (1908-1909, 1913) 1920
SF10 Chiriguano SF10
Chané SF8

IV.

Hunting Equipment.

The Chiriguano and the Chané are not keen huntsmen. They are rarely seen out hunting. Their hunting-weapons are the bow and arrow, the pellet-bow, clubs, slings, and snares, all of their own manufacture. The Chiriguano have bird-nets too, and formerly they had the bola as well. The Chiriguano and the Chané have no weapons exclusively used in warfare. Formerly they had lances[1]).

The bow and arrow are going quite out of use among these Indians except for fishing and as a weapon for boys. The degenerate type of bow now seen among the Chané and Chiriguano is certainly not original. According to LIZARRAGA[2]) the Chiriguano used to have bows of a man's height. It is of great interest to learn from LIZÁRRAGA that the Chiriguano used to protect their left wrist with a small piece of wood to prevent the skin being grazed by the bow-string. Something similar occurs among the Ashluslay (see Part I. P. 42).

Their arrows are very like those used by the Choroti and Ashluslay. The arrow shafts are of the same kind of reed[3]). At the Rio Parapiti this plant, which grows abundantly beside the Rio Pilcomayo is cultivated by the Indians. On the Rio Parapiti there is a place called Ouivarenda, which means »where there is chuchio.» This plant, the *Gynerium* sp. whose seed-stalks so many Indian tribes use

[1]) CHOMÉ P. 331.

[2]) P. 328.[4]/1 »Andan desnudos y quando mucho qual ó qual tiene una camisetilla hasta el ombligo; . . . son grandes flecheros; sus armas son arco y flecha; el arco tan grande como el mismo que lo tira, y porque la cuerda no lastime la mano izquierda, en la muñeca encajan un trocillo de madera y allí da la cuerda».

[3]) *Arundo donax.*

[4]/1 [Errata: this should read "See Serrano y Sanz P. 328."
(Errata sheet, Cat. 116, P245 -- Analyst.]

5:Nordenskiöld E-5½(1908-1909, 1913) 1920
SF10 Chiriguano SF10
Chane SF8

for arrow shafts has been completely destroyed by cattle along the Rio Parapiti. Formerly the Chané made the shafts for their arrows of »chuchio».

The arrow points are made of hard wood and sometimes of iron. Arrows with several tips are used for fishing and sometimes also for shooting birds. Arrow-tips made of cactus spikes are used by some Chiriguano for fishing. Some characteristic types of arrows are depicted here (fig. 6). Some arrows are feathered to guide the flight. The feathers are fixed in the way that MEYER calls »Peruvian cemented feathering». The feathers are quite small as on Chaco arrows generally. Arrows with thickened heads (bird arrows) are very common. Some of them have the shape we see depicted here (fig. 6 E). This type does not occur among any of the other tribes I got to know during my travels, but they are common among several peoples living in the east, e. g. the Cainguá, Guató, and Bororó, and in the northern part of S. America, among the Trio, Guahibo and others. They have most likely been introduced here by the Chiriguano. It is not probable that they have come from the Arawaks for, as a rule, they do not use blunt bird-arrows. In Part I I have published a map (No. 3) showing the distribution of the bird-arrow in S. America. Later on I will deal with arrows particularly used for fishing. The Chiriguano and Chané sometimes use a special kind of bast to bind round the arrow where the point is inserted in the shaft. The same kind of bast is not met with among the Choroti and Ashluslay or among the other Chaco tribes I have got to know. It occurs, however, among the Cainguá.

In part I I have already published a map showing the distribution of the sling in S. America. I have nothing to add to this which cannot be seen in the subjoined drawings (fig. 7).

The pellet-bow is rather common among the Chiriguano and also among the Chané. It is chiefly used by boys and youths. I wish here to make a few additions to what I have said about the pellet-bow in Part I.

5tNordenskiöld E-5 (1908-1909, 1913) 1920
SF10 Chiriguano SF10
Chané SF8

This contrasts with the Chiriguano and the Chané at Rio Itiyuro and is certainly owing to the poverty of the first-mentioned.

Sometimes the Chiriguano and Chané calabashes are surrounded by a net for greater convenience of carrying. I have already dealt with these in the foregoing.

The stoppers of calabash-bottles are generally pieces of empty corn-cobs. These are now and then used also as stoppers for earthen-vessels. The Choroti and Ashluslay, as a rule, make use of wax, which material is little used by the Chiriguano and Chané.

Fig. 51. Calabash. Chiriguano. R. M. 523. 1/6.

5:Nordenskiöld E-5,4 (1908-1909, 1913) 1920
SF10 Chiriguano SF10
Chané SF8

C Ce 177

guano until they had settled in their present territory, let us say by trade or other connections with the tribes living in N. E. Bolivia. I will not assert that this is impossible, but I am of opinion that it cannot apply to most of these cultural elements. In any case it does not apply to such cultural elements as rubber balls, certain kinds of basket work of palm-leaves, and hammocks, which clearly overstepped the natural confines as a result of emigration. The rubber for the balls must be procured from the north, and suitable palm-leaves for basket-work is not to be found locally. The hammock is not the kind of bed best suited to this part of the continent.

C Ce 177 241

Mandioca is now cultivated only as a rarity by the Chiriguano and Chané. It is highly probable that, before they settled in their present habitat, this plant was of considerable importance to them. Neither the Chiriguano nor the Chané depended so largely on maize before they came to the parts they now inhabit. Here they have an excellent soil for growing maize.

C Ce 177 226

Fish and game are now certainly of less importance to these Indians than they used to be. I mentioned earlier that the Chiriguano and Chané now make the impression of fishermen without water to fish in. A method of fishing which is of no little importance to the kinsmen of these Indians, is fishing with poison. In these parts it is rare, but occurs, at least among the Chiriguano.

C Ce 177 824

»Chuchio» (*Gynerium* sp.) was formerly the plant that yielded at least the material for the arrows of the Chané Indians. As it has now been uprooted, its place is taken by another growth of grass, *Arundo donax*. It was not until post-Columbian times that this reed, which is used by the Chiriguano, Chané, and all the Chaco tribes for the shafts of their arrows and for other purposes, was introduced into S. America, where now, not least in El Gran Chaco, it has an exceedingly widespread distribution. (I ought to have pointed this out in the First Part of the pre-

[text continues on p. 212]

5tNordenskiöld E-5,½(1908-1909, 1913) 1920
SF10 Chiriguano SF
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sent work.) It follows that these Indians used other material for their arrows in pre-Columbian days. The Choroti and Ashluslay probably had wooden shafts to their arrows, as Chuchio does not, and probably never did grow in their country. Before *Arundo donax* grew in the Chaco it must have been difficult in many places to find material for flutes, etc. Even in the country of the Chiriguano and Chané there were reeds only in certain parts, so that the introduction of *Arundo donax* may have been of importance for other things than the material for arrows.

C
Ce
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285

The difficulty of getting suitable material for basket-making has resulted in the baskets being of less importance to the Indians of the district under examination than to the Arawaks and Guarani-tribes elsewhere. Presumably the Chiriguano and Chané used to have carrying-baskets, which were supplanted by carrying-nets of Caraguatá or Yuchan.

C
Ce
174
[343]
[515]

Pile-barns are probably a reminiscence from a time when the Chané lived in swampy parts.

I have already pointed out that the great cleanliness of the Chané and Chiriguano shows that they immigrated to their present habitat from warmer, well-watered parts.

C
Ce
177

There are not many cultural elements of which we can say with absolute certainty that they were brought by the Chiriguano, and not by the Chané. Such are, however, urn-burials and »tembeta» of the kind now in use. This is not precluded by the fact that these cultural elements were originally western. Finger-mark ornamention, the wooden mortar, and certain bird-arrows, spindles of the Bakaïri type with a little knob on the top of the stick, are also cultural elements with such a distribution that we can assume that they were originally more intimately connected with the Chiriguano than with the Chané. Further comparative investigations, and access to an extensive quantity of the necessary material will doubtless enable us, from a study of the minor details in the external form of

6: Nordenskiöld--29 E-5 (1908-1909) 1912 SF10 Chiriguano SF10
Chane SF8
Chaco Indians SK4

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Plate 16. Caraguata. A plant used in a variety of ways by the Indians in the Chaco.

C Ce 174 515 /204 cont./ and Mataco, who still in part dress in fur cloaks, seem to me, like the Fuegians and Patagonians, to have immigrated to the Chaco from the cold pampas in the south where washing was extremely unpleasant, whereas the Chiriguano and Chané come from the north, out of the warm, humid, virgin forests, from the great rivers, where bathing was always pleasant and refreshing. Now, where /Fig. 109 appears here/ they live under the C Ce same climatic conditions, the former have preserved their dirt, the latter their cleanliness.

264 171 515 Im Thurn (1) reports that the Indians in Guiana bathe

1. Im Thurn: Among the Indians of Guiana. London, 1883.

C 304

Fig. 108.
Woman's tattooed arm. Chiriguano.
Itapenbia.

C Ce 264 171 515 immediately after eating, without any harm to them. I often observed the same thing here.

C Ce 515 The Chiriguano and various Chané shampoo the head with the seeds of "nyantéra," which they grind. For the same purpose the Chané on the Rio Parapiti use the bark of the mistol ● 824 /Zizyphus mistol Griseb./, "yŭag." The nails, and /205/ not Ce 302 412 least the toenails, are also very carefully tended. For combing they use combs carved in wood or made out of sticks of cane tied together.

352 [114] [171] [513] been imitated from the Europeans. The Chiriguano also sleep in hammocks made of cotton yarn, and on reed mats and skins spread on the ground. Stools for sitting on I have not observed among the Chiriguano. They do, however, possess such articles of furniture,[1] which, however, must be of 353 considerable rarity. Along the walls of the hut will be seen an orderly 415 array of cooking and roasting pots, water pitchers, and pots for maize [531] beer, arranged in rows, often of exceedingly beautiful shape and with painted decoration (figs. 217—225). From wooden hooks in the roof are hanging bunches of maize cobs, pumpkins or other foodstuffs; arrows, bows, and other gear. From the roof there are also suspended clay bowls (figs. 224 and 225), used as repositories for smaller articles of value. Clothing, ornaments, and such like, are also stored in large clay jars placed on the ground. As bowls there are also used the scaly skin of armadillos, and calabashes (fig. 226).

[352] → [291] [302] [411] [415] ← [237] [824] → 354 →

Fig. 194. Man and young woman. Chiriguano. San Luis. Bolivia. Photo. E. v. R.

Outside every hut there is, as I mentioned, a fireplace which is generally used for cooking the food, unless the weather makes this im- 356 possible. The huts, as well as the open spaces between them, are kept particularly neat and clean. They are swept every day, and the sweepings are burnt. The huts are practically always free from vermin.

291 [177] The Chiriguano men nowadays generally wear shirt and trousers of European cut (fig. 194). The poncho shirt is, however, still to be met with among this tribe[2], but only very rarely, and I have never personally

[1] Nordenskiöld (13), p. 163 and fig. 85 (12), pp. 15 and 16, and fig. 3.
[2] Nordenskiöld (12), p. 59.

7: Rosen E-5 (1901-1902) 1924 SF10 Chiriguano SF10

302 The hair is tended with very neat-looking wooden combs (fig. 196).
[462] Among the Chiriguano I also noticed composite combs of the type used in the Chaco (fig. 85).

[386] Among the men as well as the women, the custom obtains of painting
[824] the face red, the pigment being prepared from Bixa orellana. Many of the men I met in the neighbourhood of San Luis had red-painted the whole face below the eyes, and some of the women had circular red
302 spots, about 3 to 4 cm in diameter, painted on their cheeks. On the
304 other hand, I did not see any tattooed Chiriguano. Instances of tattooing have, however, been noted by Nordenskiöld, who also has seen Chiriguano women who had stained their teeth dark blue with some vegetable extract.[1] In the past, tattooing as well as teeth-staining were commonly practiced by the Chiriguano.

301

Fig. 197. Lip-stud (tembeta) of tin, with inlaid, pierced, turquoise-coloured glass-beads. Chiriguano. Bolivia. $^{2}/_{3}$. Riksm. 03. 3. 822.

Another Chiriguano ornament intimately connected with the human body is the lip stud (»tembeta»), which is exclusively worn by men and by youths who have attained marriageable age. The Chiriguano lip stud of the present day consists of a hollow tin cylinder with two laminate projections (fig. 197). The cylinder is filled with some waxy substance, into which are embedded a number of small beads of stone, glass or porcelain, usually of a turquoise-blue colour. The lip stud is inserted from the inside, through a hole made in the lower lip, so that its circular, bead-beset, front surface barely shows beyond the skin of the lip. The base of the lip stud, which is slightly concave, then rests against the teeth of the lower jaw. This quaint ornament creates no displeasing impression, but should a Chiriguano take it out, he would look both pitiable and ridiculous, as the saliva then runs through the large hole in the lip. Hence it is considered disgraceful to be seen without the lip stud, and on many occasions I have noticed the women scornfully deriding such men as had sold their lip ornaments. As soon as a man had taken out his lip stud, he generally put his hand to his mouth for concealment until he had time to put in a substitute stud, usually made of wood.

The lip stud that is here shown, which weighs 18.5 grammes, has a base plate 3.4 cm long, and its cylinder is 1 cm high, with a diameter

[1] Nordenskiöld (15), pp. 83, 85 and (18), pp. 187—188.

All arrow-shafts have the forepart strengthened by a waxed lashing of bast or string, of a width from 5 to 11 cm. The rear end of the shaft is generally also reinforced with a waxed lashing, applied immediately above the string notch. This latter lashing is usually about 1 cm wide. In those of the arrows here reproduced that seem to be without notch-end lashing, this has become detached, except in the case of the arrow in fig. 40, which never was provided with a lashing of this kind.

I have mentioned in the foregoing that the Chiriguano cultivate a kind of reed plant (Arundo donax) in order to obtain therefrom a suitable material for making arrow-shafts. In making a reed into an arrow-shaft, the arrow-head is fitted to the thicker end of the reed (the lower part of the growing reed), because in this way, when the arrow is being discharged, the joints glide more easily over the bow stave than if the thinner end of the reed were turned to the front. The reed joints are, moreover, smoothed down with some sharp instrument in order to lessen the friction between arrow and stave. Arrow-shafts of a certain very light kind of wood are used by the Chiriguano of San Luis. Such wooden shafts I only saw on the long bird and fish arrows. I have never observed either arrow poison, or feathering on arrows, among the Chiriguano, but Nordenskiöld has seen feathered Chiriguano arrows.[1]

For bird-shooting the Chiriguano use arrows with club-shaped, wooden heads. The striking-face of this blob-head is usually slightly conical, and sometimes given a small, cylindrical projection (fig. 212). This type of arrow-head has been constructed for the purpose of preventing the arrow — if it misses its object — from fixing itself in the stem or branch of a tree, and of making it instead drop to the ground. As birds frequently are sitting high aloft in the trees, the hunter would not have much chance of recovering his arrow, on missing his bird,

Fig. 206. 05. 3. 900. Fig. 207. 05. 3. 903. Arrows with lanceolate iron heads, and reed shafts. Chiriguano, San Luis, Bolivia. ½ Ekholm.

[1] Nordenskiöld (13), p. 96.

[Text continues on p. 212]

411
[226] two barbed prongs made of some hard wood (figs. 213 and 214). The
arrow in fig. 210, which has only one prong, is used both in hunting and
[829] for fish-shooting. The Chiriguano also use fish arrows pointed with a
number of cactus spines.[1]

The fish spear has in later times become a very scarce implement with the Chiriguano. The only specimen obtained, as far as I know, is the one brought home by me, and now belonging to the Rikesmuseum in Stockholm (figs. 215 and 216). Erland Nordenskiöld, who has compiled
[114] a map of the distribution of the fish spear in South America, has been kind enough to inform me that the only mention he has come across in the literature, concerning its occurrence among the Chiriguano, is to be found in the account of the Viceroy Francisco de Toledo's unsuccessful expedition against these Indians.[2]

The fish spear I came upon among the Chiriguano in the neighbourhood of San Luis, has a 260 cm long shaft, made of some light kind of wood, very free from knots,[3] at one end of which two barbed wooden prongs are lashed on by means of a thin leather thong. The full lengths of the prongs are, respectively, 32.1 and 31.4 cm, and they project 20.2 cm from the shaft. One of the points has, however, been of a somewhat greater length, but has got blunted off. Both points have seven barbs on their outer sides. To ensure a perfectly firm fastening of the prongs, the fore end of the shaft has been wrapped with a piece of cloth, and over this the prongs have been lashed on.

323
[462] I have already enumerated the various kinds of Chiriguano household furniture. Among them, clay vessels hold a very important place. The Chiriguano are clever potters. It is only the women, though, who work at this industry.

In fig. 217 we see a potter's workshop, with a number of finished and unfinished pieces of earthenware. At the hut entrance is sitting a woman, who, with a piece of stick, is giving a finish to a large pot, which has been built up of rolls of clay, and is still unburnt.

[126] In figs. 218—225 I have reproduced some typical Chiriguano clay vessels that I collected at Aguayenda. These vessels are particularly well made. The peculiar rim warts seen on the hanging vessel in fig. 225,

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[1] Nordenskiöld (II), fig. 13 a.
[2] Acosta (I), Part I, Chap. XV.
[3] Unfortunately, during the transportation home, the handle was, unknown to me, cut into two parts.

[P 216 is blank]

323 counterparts of which are found on many ancient Peruvian clay vessels, have been more fully described by me in »En förgången värld».[1] The cord by which this vessel was suspended passed round the edge, and then upwards, between the points of the rim warts. At each wart a hole has been pierced through the rim of the vessel, but these perforations are so very small that they cannot very well have been used for fixing any string by which to hang up the vessel.

Besides the clay pots here reproduced — often graceful of shape and beautifully painted — there are also plain, unpainted clay vessels for cooking and other kitchen purposes. Chiriguano ceramics are of an exceedingly great variety as to form, and many of the shapes are identical with those of clay vessels found in ancient Indian graves and in the ground of ancient dwelling-sites in those regions of the Andes that border on the present Chiriguano country.

824 415 Next to clay vessels, bottles and bowls made of calabash may be said to predominate among the household furniture of the Chiriguano. The bowls are often provided with pokerwork ornament (fig. 226).

273 On festivals — and also usually, though not always — the Chiriguano drink an intoxicating liquor (»chicha», in Chiriguano: »cangui»), which they prepare from maize. In [415] huge wooden mortars the maize is [531] pounded to flour, which is poured into large clay vessels filled with → water. This mixture is made to boil, and when it has cooled down, lumps of chewed maize dough are put into it to produce fermentation. These masticated mouthfuls of maize are usually allowed to dry in the sun, before use, and are then frequently spread on a [114] bedstead (fig. 190). This method of preparing maize beer naturally

Fig. 218. A jug for holding maize beer. Earthenware. Bottom part and inside unpainted. The rest painted brownish yellow, with ornaments in dark brown (marked in black) and red (marked in thin lines). Chiriguano. Agnayrenda, Bolivia. $^{2}/_{3}$. Riksm. 05. 3. 837.

[1] see Rosen (I), p. 344 et seq.

7:Rosen E-5 (1901-1902) 1924 SF10 Chiriguano SF10

534 same way as Pan pipes, and *naturally gives out tones, when one end of the tube is closed, different to those producible with both ends open.* The pipe is open at both ends, therefore, not only because this allows the instrument to be easily cleaned from dust, dirt and saliva, but also because *this construction gives the possibility of a greater number of tones.*

531 415 824 534 301 531

Fig. 226. Bowl, of calabash, up-turned, with pokerwork ornaments. Chiriguano. Carapari. Bolivia. 1/2. Riksm. 03. 3. 831.

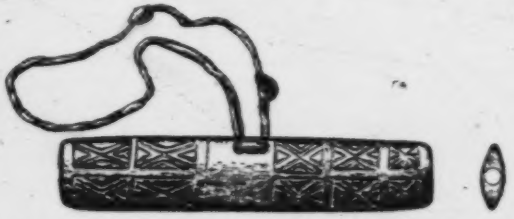

Fig. 227. Whistle, made of hard, black wood. Incised ornaments. Two cracks near one end of the tube have been filled up with a waxy substance. Chiriguano. Aguayrenda. Bolivia. 1/2. Riksm. 03. 3. 848.

534 171 That the Indians occasionally also give a thought to keeping dust, etc., from getting into their whistling pipes, is, besides, evident from the pipe shown in fig. 228, which is an Araucan whistle from Cautin, Chile, a tubular piece of wood, 27.5 cm long. A common brass thimble is fitted over the lower end of the pipe, and for its top end there is a small, well made stopper of woollen-yarn, connected to the pipe with a string, so as not to get lost when taken out for the whistle to be blown. Concerning this stopper, Eric Boman, who has reproduced the pipe in one of his works, writes as follows: »Este tapón sirve para cerrar la boca del silbato, cuando éste no se usa, e impedir que entren allí tierra y otras impurenzas.»[1] »This stopper serves to keep the mouth of the whistle closed when the latter is not being used, and prevents dust and other dirt from entering.»

Fig. 228. Whistle, found at Cautin. Chile. From Boman.

Objects of tubular form, in construction corresponding to the one here reproduced in fig. 227, have been found in ancient Peruvian graves, and not only the Chiriguano, but also many other tribes now inhabiting areas in the neighbourhood of what once was the Inca domain, are still

[1] Boman (3), p. 518.

/22 cont./

352 513 [251] The Chiriguano generally sleeps on a kind of cot (catre), that is, a bed frame made of cane. Such beds, which in addition to their own purpose also serve for drying maize, have been represented in drawings by Eric v. Rosen (95), Erland

95. Eric v. Rosen, op. cit., p. 190.

[174] [178] v. Nordenskiöld (96), and Métraux (97). No doubt /23/ the

96. Nord. 2, Fig. 2.

97. Métraux 1, Fig. 125, p. 470.

cold climate of the region to which the Chiriguano had emigrated made them abandon the use of the hammock for sleeping, not very practical for such a climate, and replace it with the cot, which was already common among the tribes of those regions. Lacking a cot, the Chiriguano sleep on the ground. In that case they use for a bed large mats made of cane or palm leaves, or also hides (98). I acquired from the Chiriguano one

[232] [824] [126] [824]

98. Nord. 1, p. 177. V. Rosen, op. cit., p. 200. Métraux 1, p. 470.

such mat plaited out of palm leaves (Fig. 95).

Chiriguano Mat (túpa) in the Collection

I. A. 540. Length 1.75 m. Width 1.50 m. (Fig. 95).

352 17 [126] In some Chiriguano houses I also saw wooden benches (apika), but unfortunately I could not acquire a specimen. Those benches in the form of a sled are very similar to the kind of benches that are very common among the Indians of Brazil (99) and those that we also know from the ancient

[113] 99. Carly /sic/ von den Steinen: Unter den

Ce 322 412 191 /28 cont./ The main difference between the Chané combs and the combs of the Chaco tribes is that the teeth of the latter are made of little sticks of cane, and the teeth of the former, of little sticks of any other kind of wood. The /29/ wooden teeth of the Izozó Ce 322 412 comb in our collection are between two flat little sticks of cane vertical to them, and on the handle end, between the little sticks whose lower parts form the teeth, shorter little sticks have been inserted, so that at the lower part of the Ce [284] comb there is a certain distance between the teeth. The lacing, consisting of cotton threads, covers the upper part of the comb as far as the edge, but also slightly covers the lower part which forms the teeth. The lacing is not secured with wax.

With respect to hair care, we still must mention the Ce Ce 302 824 data of Nordenskiöld and of Métraux (127) /see footnote 127 above/ to the effect that the Chiriguano and some of the Chané rub their hair with "Nyantéra" seed ("ñitira," according to Métraux), and the Chané of the Parapití with the rind of the mistol /Zizyphus mistol/, "yuag."

From Father Lizárraga's description (128), we know that

128. Moreno II, p. 101.

Ce Ce 302 178 [191] the Chiriguano and Chané in the past plucked out the hairs of the body, except from the head, as do most of the Indians of South America. Father Lazarraga /sic/ says that the Chiriguano plucked out their eyebrows and eyelashes. This custom does not exist today, and the photographs of nude Chiriguano men shown by Lehmann-Nitsche (129) show that today as a general

129. Lehmann-Nitsche, op. cit., Fig.

rule they do not remove hair from the pubic regions. Also one meets today some middle-aged men who have mustaches, such as the cacique of the Izozó shown in Figure 10 and some of the Chiriguano men shown in drawings by Lehmann-Nitsche (130).

130. Lehmann-Nitsche, op. cit., Plates VIII-X.

C
Ce /34 cont./
756 most other Indians of South America, there is a professional
171 physician who is charged with the treatment of the sick, this
C treatment in most cases consisting of sorcery among these
Ce Indians too. The physician attempts to dispel the evil by
755 sucking out foreign objects which have penetrated the body of
757 the bewitched sick person. In addition to such treatment,
824 remedies are used among the Chiriguano and Chané, which,
237 in addition to those made of plant substances, include the
fat of various animals applied extemally for different illnesses.
Ce The Chané treat wounds with boiling water.
752

Burial among the Chiriguano and Chané who live outside
C the missions is generally still done in urns, according to
Ce primordial custom. According to Nordenskiöld (149), the
764
415

149. Nord. 1, p. 208.

large pots in which chicha is prepared are also used as funeral urns, and another pot is used to close the urn. Often the dying person, even before being completely dead, or soon after death, is crammed into the urn in a squatting position. A
C calabash of water is placed with the dead person in the urn,
Ce which is buried within the house. Commonly the house, after
768 the burial, is abandoned for some time, but is occupied again
C later. Such a funeral urn of the Chiriguano of the Caipipendi
764 Valley is shown in a drawing by Erland Nordenskiöld (150).
415

150. Nord. 1, Fig. 113.

Up to half of the urn, which is provided with a cover, is disenterred. Nordenskiöld's statement that the Chiriguano use the same pots which serve for the preparation of meals as funeral urns is significant. From that we can deduce that a funeral urn found in other regions might also have served, during the lifetime of the dead person buried in it, some other purpose related to the economy of those Indians.

C 386 323 531 /56 cont./ The white color is an earth paint (kaolin), the red, dark brown, and black are pulverized mineral substances of the corresponding colors (248). Métraux has published the results

248. Nord. 2, p. 145.

of chemical analyses and petrographic observations which he made on these mineral colors (249).

249. Métraux I, 385.

According to Nordenskiöld, the Chiriguano at times paint their vessels with a paint consisting of a mixture of urucú and oil, which is probably applied after the vessel has been baked (250).

250. Nord. 2, p. 145.

C Ce 323 Before the vessel is baked, it must be quite dry. In the case observed by Nordenskiöld among the Chané on the Itiyuru River, the vessel was dried for a day in the shade, which can be done, according to another note by Nordenskiöld, in the sun as well (251). The baking is done, according to Nordenskiöld's

251. S. Linné, op. cit., p. 121.

observations, by piling firewood, maize cobs, and dry cow dung around the vessel. This fuel must burn with a strong fire for a quarter of an hour and, if the vessel is large, even longer (252).

252. Nord. 1, p. 246. Cf. Nord., Fig. 122.

C 323 [824] Some of the Chiriguano vessels are varnished. According to Nordenskiöld, such vessels are common among the Chiriguano and Chané on the Itiyuru River. They smear them with the resin of a Minosoidea, which the Chiriguano call "taraviruti." When varnished in this way the vessels acquire a yellowish sheen. Only the vessels of the Chané on the Itiyuru sometimes show black

Ce 323 824 386

Chane SF8
Izozo

/60 cont./

C 285 Plaited objects of the first type are made in such a way that the strips of one group are plaited with the strips of another group vertical to the first one, in such a way that the strips of the first group pass alternately a certain number of the strips of the second group and are passed by them, and in such a way that the meshes which go in the same direction form lines of steps. The number of the strips passed each time by one strip of the other group is generally three or two at a time, but there are cases in which only one strip is passed each time.

C [126] [513] [415] [291] Among the plaited objects of this type, I obtained from the Chiriguano a large sleeping mat, small flat baskets /canastillas/, sieves, a quadrangular basket /cesta/, and a hat, and from the Izozó small flat baskets /canastillas/similar to those of the Chiriguano and two different kinds of baskets /cestas/. In addition, the Chiriguano and Chané also infrequently use fans for fanning the fire (tapèkua) plaited out of palm leaves (260).

Ce [415] [126]

C Ce 285 372

260. Nord. 1, p. 56.

Métraux has described and shown in a drawing such a fan for fanning the fire. This fan is plaited out of the leaves of the caranday palm in the "Stufengeflechte" style, in such a way that strips of the first group pass alternately two strips of the second group and are /Plates XXVI-XXVII appear here/ /61/ passed by them. The leaflets, separated from the stem, enlace a stick which, forming the upper edge of the fan, replaces the stem of the pinnate leaves of other palms which are used by other tribes of South American Indians in the manufacture of plaited fans (261).

C Ce [824]

261. Métraux I, pp. 460 and 461 and Plate 85.

Chane SF8
Izozo

/61 cont./

C
126
285

Plaited Objects of the First Type (Stufengeflechte) in the Collection

I. A. 540. Mat (Chir.) Lgth. 1.72 m. Width 1.50 m. (Fig. 95)
I. A. 541. Flat basket (Chir.). Dia. 39 cm. (Fig. 92b.)
I. A. 542. " " " " 42 cm.
I. A. 543. " " " " 43 cm.
I. A. 544. " " " " 38 cm.
I. A. 545. " " " " 38 cm.
I. A. 546. " " " " 32 cm. (Fig. 93.)
Ce [285] I. A. 744. " " (Izozó) " 36 cm.
I. A. 745. " " " " 37 cm.
I. A. 746. " " " " 46 cm. (Fig. 92a.)
I. A. 547. Sieve (Chiriguano). " 38 cm.
I. A. 548. " " " 39 cm. (Fig. 94.)
I. A. 549. " " " 39 cm.
Ce I. A. 551. Basket " Lgth. 32 cm. Ht. 16 cm. (Fig. 101)
285 I. A. 677. " (Izozó) " 33 cm. " 16.5 cm. (Figs. 98a,100)
126 I. A. 678. " " " 28 cm. " 14 cm. (Fig. 98b)
I. A. 725. a. " " " 27 cm. " 12 cm. (Fig. 86a)
I. A. 679. " " " 21 cm. " 22 cm.
I. A. 680. " " " 39 cm. " 31 cm.
I. A. 681. " " " 27 cm. " 23 cm. (Fig. 96).
I. A. 682. " " " 31 cm. " 26 cm.
I. A. 683. " " " 26 cm. " 21 cm. (Fig. 97)
I. A. 684. " " " 55 cm. " 29 cm.
I. A. 685. " " " 44 cm. " 30 cm.
C I. A. 686. " " " 46 cm. " 24 cm.
285 I. A. 512. Small bag with cover (Chir.) " 9.5 cm.
[291] I. A. 554. Hat (Chiriguano). Ht. 12 cm. Dia. 30 cm. (Fig. 99.)

The material of the plaited objects that I have mentioned above consists of strips of palm leaves or strips of cane, and that of the Chiriguano basket I. A. 551, of strips of wood. Because these Indians do not have palms with pinnate leaves available, they
C
[824] must use the peltate leaves of the caranday, from which comes the difference between the plaited objects of these Indians and those of other Tribes.

8: Schmidt--193 E-5 (1935) 1938 SF10 Chiriguano SF10
Chané SF8
Izozo

/73 cont./

The Technique of Making Nets

C Ce 286

The technique of making nets is widespread among the Chiriguano and Chané and is used to make various objects, such as fishnets, hammocks, nets for carrying burdens, bags, and slings. The material used for making these nets generally consists of threads made of caraguata fibers. In the collection there are two Chiriguano burden-carrying nets made of woolen threads and another one made of strips of cowhide.

C Ce [283] [824]

E [482]

The common technique of making nets among the Chiriguano and the Chané is the technique called "Knotentechnik," in German, using the knot called the reef knot in English. Figure 138, a and b, shows such a "reef knot," and Figure 142 shows the technique of making nets with this "reef knot." According to Nordenskiöld (275), the Chiriguano and Chané use small

C Ce [284]

275. Nord. 3, p. 207.

rectangular boards for making their nets, like those with which we are familiar from many other tribes of South America. Unfortunately, I did not acquire such a board from the Chiriguano or from the Izozó. By continually wrapping the first board with a thread the simple loops which are shown in the diagram (Figure 142) in the upper row are formed. The thread, after having reached the other end of the board, are wrapped continuously in the opposite direction around a second board, being connected each time, with a knot, with the loops of the thread wrapped around the first board. If the thread has been looped in the manner described, until it gets to the first loop of the first row, the first board can be removed to serve in the formation of the third row of the meshes of the net, which is made in the same way as the second, but in the opposite direction. It is clear that nets made with this technique, in their simplest and least complicated form, must have a rectangular form, and this form is typical of all of the nets of the Chiriguano and Izozó, while various other South American tribes, for example, the Bakairí /Bacairi/, who formerly lived on the tributaries of the Xingú River (in Mato Grosso), make triangular nets.

C Ce [171]

/76 cont./

The Working of Skins and Leather Tanning

The Chiriguano and Chané know the art of tanning leather, and they use for that the bark of the "Piptadenia" and other trees. No doubt they obtained the knowledge of this craft from the whites. They use not only tanned leather, but also strips of animal skin for the making of sundry objects (279), but the

279. Nord. 2, p. 165.

craft of working leather and skins is not an important one. It is said that formerly the Chiriguano, when they went hunting, wore leather clothing conforming to the European style (280).

280. Nord. 1, p. 184. Nord. 2, pp. 60, and 61. Viedma, op. cit., p. 181. Cited in Nordenskiöld.

Beyond that, leather is not used for making clothing, except to make sandals (281). The men's modern custom of wearing

281. Nord. 2, p. 69, Fig. 23.

a leather belt must be attributed to the influence of the whites. Without counting its application to the making of bridles and saddles for horses and asses, either draft or saddle animals, on which we have no data, strips cut from leather or from animal skins are used in the form of straps, principally to transport or hanging up some object. In place of the common vegetable-fiber cords, leather straps are often put on the nets for carrying burdens, on hammocks, and also on the hoops mentioned above, in which they keep things. The band of the Chiriguano net for carrying burdens I. A. 564 consists of an untanned cowhide strap. See Figure 134 /see p. 200/. The Izozó vessel I. A. 617 has a leather strap attached to its handles. The strings of the bows for shooting arrows are strips of animal skin, and the Chiriguano net I. A. 573 is made of cowhide strips.

/80 cont./

Ee 534 The double whistle I.A. 495 consists of two pieces of cane joined together in the manner of Panpipes. In contrast to the flutes described in the preceding, the two tubes of these whistles have lips. One, which has four holes for making the sounds vary, measures 33.5 cm., and the other, which does not have such holes, is only 7 cm. long. A whistle of this kind, but not double, is shown in a drawing by Nordenskiöld (303).

303. Nord. 2, Fig. 36b.

In addition to these musical instruments, Nordenskiöld describes a few others that he saw among the Chiriguano and Ee [171] Chané. Among them can also be found those round flutes which are used by many tribes of the Chaco and one of which is shown in a sketch by Nordenskiöld (304). They also have large

304. Nord. 2, Fig. 35.

trumpets, which the Chiriguano call "angùahuasi," while the common trumpet is called by the same name as is the mortar, "angúa" or "angúarai." One can also find trumpets made out Ee [237] of a cow's horn or a calabash, which are blown at the upper [824] end (305).

305. Nord. II, p. 119, Fig. 37 A and B.
Métraux I, p. 337, Fig. 35.

According to Nordenskiöld, the Panpipes, which consist of several flutes joined together, are rarely found among these Indians (306).

306. Nord. 2, p. 126.

Ee 415 532 Plastic art is little developed among the Chiriguano and Chané. On rare occasions we find plastic art in the form of animals in the forms of the baked clay pottery of the Chiriguano (307).

307. Nord. 2, Fig. 41, N. 4, and Fig. 45, N. 20.